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## ORIGINAL ARTICLES.

### NERVOUS MATTER, WHAT IS IT?—THE AUDITORY NERVES.

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"Let us return to our mutton."

THE natural and legitimate order of our investigation of the nervous matter of the special senses, led us, after discussion of the sense of vision, to that of hearing, and as the reader will perhaps remember, we began the consideration of the latter sense with an inquiry into the nature of the organic structure of which the auditory nervous matter is composed. We called attention to the specific peculiarity of this nervous matter, to its name, "*Portiomollis*," signifying its soft consistence, as contradistinguished from the "*Portio dura*" or hard substance of the facial nerve, with which it is associated until it leaves it, and seeks its own home in the labyrinth of the ear. We noted its gray appearance, its rich endowment with the "*substantia gelatinosa*" of subtle nervous matter, its "*fusiform nerve cells*, and nucleated ganglionic enlargements." We emphasized its responsiveness to sonorous oscillations alone, by which its auditory impressions are received, conveyed brainward, and interpreted to the sensorium commune, and we hear, and understand what we hear. A few cursory observations upon the external ear led us to the end of the external passage, the *meatus auditorius externus*, and there we found a membrane or curtain stretched across the passage. The external "*membrana tympani*," external drum, subject to tension and relaxation under the influence of its tensor and laxtor muscles, all of which we examined, and by which sonorous impressions are regulated and adapted to auditory reception. We passed on, and when we had reached the tympanic side or surface of the membrane, instead of crossing the bony bridge, the *pons ossicularis tympani*, and seeking entrance at the door, or rather the oval window, "*fenestra ovalis*," that would lead us into the vestibule or hall of entrance to the home of the auditory nerves, we stopped to look at and question a delicate white cord, the "*chorda tympani*," passing between two of the "*ossicula auditus*," the malleus and incus, like a stream under an overspanning bridge. Not only so, but we soon became allured and bewildered by the many objects of interest to

the true physiologist and pathologist and student of the kaleidoscopic variety of the wonders of nervous matter, and its endless powers and manifestations in the human organism, and which we found congregated in the tympanic cavity. We felt like the genuine art lover, who wanders through a gallery wherein all that's best and noblest of man's inspiration in the interpretation of nature, speaks from the canvass and breathes in immortal marble. He is lost to all else, in his rapt contemplation of the affluence of beauty that surrounds him on every side, and that fills his mind and heart with visions that he may recall at will, and feel again that even the memory of "A thing of beauty is a joy forever." But we must turn a deaf ear to these allurements which, once before, led us astray, and not forget where we are going, and that now we are in the "*vestibulus auditorius*" waiting to be admitted to the secret penetralia of the auditory "*Holy of Holies*."

We are going to be led through galleries presently, and, like the art lover, will be surrounded on every side with objects that will exact our admiration and wonder. We are seeking for and listening to hear the tone that lives in each one of those auditory nerve-fibrillæ, just as we tried to interpret each one of the olfactory fibrillæ in its appreciation of nauseous odor or fragrant flower, and the retinal rods and cones in their individual appropriation of chromatic light, whether it comes in luminous force from the lightning's flash or lunar ray. We will not heed that old cynic, Moliere, nor the invective in his "*Fourberies de Scapin*" of his famous and querulous "*Que diable allait-il faire dans cette galere*." The world is wiser since his day. We seek truth, and we're not going to look for it "in the bottom of a well," but to try and find it, if we can, in one of nature's most mysterious works, and bring it out into open day. We're going to look at the auditory fibrillæ, to see them, to touch, with the curious, sentient, never-to-be-satisfied touch of searching truth, every one of the strings of this harp, whose magic tones are continually resounding within us in harmonious accord with the words of love that bind human hearts and "make all the world kin."

At this point we must pursue the same course as in the case of the senses of olfaction, vision and taste. We must study our anatomy here to help us see our way clearly before us. The labyrinth into which we are about to enter is intricate with

devious windings and turnings, and we shall go groping blindly and be lost in its mazes and hiding places unless we have the clear light of knowledge to guide us through the galleries and alleys where the objects of our pursuit await us.

Modern research has cleared up much of the obscurity that for a long time veiled the minute anatomy of the internal ear, and certain portions of it are still in doubt and dispute among anatomists and hysto-physiologists. But enough is well established to suit our present purpose, so far as the local distribution of the auditory nerves in the labyrinth of the ear is concerned. As before, we propose to spare the reader as much of anatomical detail as possible, retaining just enough to help us in solving the difficult question of "Nervous matter, what is it?" that has been the text of all our investigations, and which confronts us here with the question of "*auditory nervous matter, what is it?*" and how is it so arranged and distributed in the internal ear as to perform its own proper and specific function of hearing.

Here are two propositions before us: 1. What is auditory nervous matter? 2. How is it distributed in the internal ear? To answer the first question we must go deeply into the brain to try and discover the locality or localities of origin of the auditory nerves, and to determine, from the nature of the nervous matter we find there, the organic elements of structure of the nerves that proceed from it. Then the nervous properties and powers propagated from that organic structure will reveal themselves as a natural evolution from it. To reply to the second question—viz., How is auditory nervous matter distributed in the internal ear?—it will be necessary beforehand to become familiar with the apparatus provided to receive and accommodate it, and from which its functional powers may emanate. Let our first inquiry, then, be directed to the anatomy of the labyrinth of the ear, or those portions of it occupied by the auditory nerves, before we bring to them their auditory tenant.

Our readers are too familiar with the general divisions of the internal ear into vestibule, cochlea and semicircular canals, to require more than the mere mention of them. But they are all concerned in the occupation of them by the different portions of the auditory nerve, and therefore demand a somewhat minute investigation of their anatomy. The facts in the vestibule most worthy of consideration are, first, its being filled by two membranous sacs, called the utricle and saccule, connected with each other by a Y-shaped canal. The utricle communicates with the semicircular canals and the saccule with the cochlea by the "*canalis reuniens*." We enter the vestibule through the fenestra ovalis, and the first fact that presents itself is that we dip into a pool of water," the humor of Cotugno or of Valsalva;

and as it surrounds the membranous sacs of the vestibule, semicircular canals and cochlea, it is called the perilymph, *περί* around, and *λῦμα* water, and also that portion of it that fills the membranous labyrinth is called the endolymph of Breschet *ενδο*, within, and *λῦμα* water, so that it may be said that the whole auditory apparatus is sustained by a limpid fluid, and floats. The same fact occurs in other portions of the body. The brain floats, cerebro-ventricular fluid; the spinal cord floats, rachidian fluid, the two communicating with each other; the heart floats, pericardiac fluid; the lungs, pleural fluid; the viscera, peritoneal fluid. They are all sustained and protected by floating in a watery medium. Another fact in respect to the perilymph and endolymph, and an important one, too, in view of the transmission of sound, and which will be adverted to again when we consider the conveyance of sound by water.

Now let us take each one of the three divisions of the labyrinth in turn and see if we can discover what part each one plays in the function of audition. 1. The vestibule and its membranous sacs, utricle and saccule. Floating safely and ramifying upon the membranous sac of the utricle are certain filaments of the auditory nerve, which have entered the vestibule and attached themselves to a point of the utricle called the "*macula acustica*," or auditory spot. The same fact applies to the saccule, so that we have here encountered the first auditory agency on our way. Now, another fact, and we desire to emphasize it particularly, is the first presentation to us of certain curious little bodies attached to the utricle, its inner surface, to the saccule at the point of entrance of the auditory nerve, and also in the enlargements—*ampullae*—of the semicircular canals. These little bodies, "composed of calcareous masses of crystals of calcium carbonate," according to an eminent authority, are called "*otoliths*" *οὐλίθες*, the ear, and *λίθος*, a stone—earstones—also called "*otoconia*" *οὐλίθες* the ear, and *κόνη*, dust; and, according to the same authority, "nothing definite is known of the uses of these calcareous bodies, which exist in man, mammals, birds and reptiles."

With all due respect, we then are at liberty to hazard a perhaps presumptuous conjecture as to their uses, and we shall hazard it by-and-by, and hold on to it until somebody gives us something better. These otoliths, be it remembered, are closely connected at the "*macula acustica*" with the terminal auditory nerve tendrils. The word terminal is the term used in the books, but it strikes us that it would be more consistent with the physiological function of audition to call them *initial*, because sonorous impressions from without make their first impact upon these so-called "terminal filaments."

True, they may be called terminal as respects

the ultimate termination and distribution of the auditory nerve in the sense of its transit and termination labyrinthward. Designating the vestibule and its contents, the utricle and saccule, as the first department of the internal ear, our attention must now be directed to the second, viz., that portion of the labyrinth called anatomically the semicircular canals. Like the membranous utricle and saccule, which occupy the bony cavity of the vestibule, so the semicircular canals also contain membranous sacs that fill about one-third of their cavities. These sacs again, like those of the vestibule, are surrounded by their perilymph and endolymph, and have auditory filaments ramifying upon them and also their otoliths in the ampullæ of the canals, so that the anatomy of the second auditory department is comparatively simple, but, as we shall see by-and-by, has its distinct physiological uses. Now we reach the true seat of the sense of hearing in the third auditory department, viz., the cochlea. In the whole system of anatomical nomenclature, there is no name applied by anatomists, with the exception, perhaps, of the ossicles of the tympanum, more singularly apt and appropriate, so far at least as external configuration and appearance go, than the name of cochlea given to this portion of the labyrinth of the internal ear. Not only so, but the special fitness of its physical and architectural form and general arrangements for the purpose to which it is dedicated, viz., the accommodation and comfortable occupancy of the almost innumerable filaments of the auditory nerve, is one of the most perfect and beautiful instances of the adaptation of means to end that can be found in the whole domain of the physical anatomy of the body, and of the fitness of anatomical structure to promote and effect physiological functional uses and meet their necessities. The minute anatomy of the cochlea is somewhat complex, and it is only within a comparatively recent period of time that many features of it have been detected by anatomical research, and, under the penetrating eye of physiological experiment and critical investigation, has light been thrown upon many hitherto obscure points of the physiological functions of this department of audition. The reader will therefore, we hope, pardon a little minuteness of detail, of which we shall spare him as much as possible, consistently with our inflexible purpose of finding out whatever we can about this mysterious "Nervous matter, what is it?"

For the purpose of simplification and the relief of otherwise intricate description, let us, in the first place, liken the cochlea—the snail shell—to a pyramid or cone, involuted or coiled upon itself, and, like all pyramids or cones, having its base, its intermediate length or shaft, and its apex. The interior of the pyramid is hollow, and assumes the form of a spiral canal reaching from its base to its apex or cupola, and, like the inte-

rior of the vestibule and the semicircular canals, is lined by the periosteum and the membrane proper of the cochlea. This membrane occupies the spiral canal of the cochlea, and fills it from base to apex. Upon a vertical section of the cochlea its spiral canal is seen to be divided by a septum into two canals, one below the septum, the other above. The one below begins at the fenestra rotunda, one of the windows, as we remember, looking from the cavity of the tympanum into the labyrinth, or looking into the cavity of the tympanum from the cochlear portion of the labyrinth; and because the fenestra rotunda communicates with the tympanic cavity this spiral canal is called the scala tympani. The one above the septum communicates with the vestibule, and is therefore called the scala vestibuli.

In this way the cochlea is in free association with both tympanum and vestibule, and thus it is easy to see that all sonorous impressions coming from without readily find their way to the cochlea and to the auditory fibrillæ which inhabit it and with which it abounds. Now then we have established a direct route of communication with the outer ear and its meatus auditorius externus, at the bottom of which, as we well remember, is its membrana tympani or outer drum, with its one surface looking outwardly and the other looking into the tympanic cavity or middle ear, as it is called. Here we set foot upon the bridge—the pons ossicularis—that spans the tympanic chasm or cavity. Let us pause here awhile and recall the many objects of interest to anatomist, physiologist and pathologist, these nerves occupying and passing through this cavity on their several destinations, coming from so many sources and carrying with them their many and various functional powers and properties, all of which have already passed in review before us and been subjected to critical investigation.

We now proceed on our way, cross the bridge and find ourselves knocking at a door or window, the fenestra ovalis, and close at hand there is another window, the fenestra rotunda. By the former we pass into the vestibule and semicircular canals; by the latter into the cochlea. Thus we have opened a highway for the intromission into the penetralia of the labyrinth of the internal ear—the home of audition—of every possible sound that can be borne by atmospheric oscillation and undulation, and that can intrude itself with crushing and "ear-splitting" force or win the senses by the amorous dalliance with which love delights to plead its gentle wooing.

What is now our next duty? It surely is to find out, if we can, what disposition is made of these sonorous impressions that are constantly coming thick and fast, to each of the auditory departments of vestibule, semicircular canals, and cochlea. But before we can assign to each one its specific functional property, there remain for



consideration the anatomical provisions made in the spiral canal of the cochlea for the lodgement and protection of the almost innumerable fibrillæ of the auditory nerve. By the consensus of physiological opinion, here resides the veritable auditory power, and here sounds of every quality and tone are received and conveyed to the sensorium commune by the auditory nerve. A little farther on and at the proper time and place in our argument, we shall, with all due respect, beg leave to question the accuracy of this opinion, and to doubt some of its deductions. In the wide range of the physical anatomy of the body, there is no part of it in which there is more perplexity to the student, than in the descriptions given in the books of the minute anatomy of the cochlea, and the distribution of the auditory fibrillæ in its mazes and recesses. Names are piled upon names, in many instances, as seems to us, quite unnecessarily, and with a want of clearness and coherent exactness, and with an amount of detail, until it becomes "confusion worse confounded." Now we certainly do not propose to "confound" our readers with all of this, nor to "confuse" him or burden his memory with a word or a name more than is absolutely necessary to tell a simple story of the cochlear portion of the auditory nerve and its home. All that is requisite to know in the pursuit and promotion of our purpose, is, as to the organic nature of the nervous matter of this portion of the auditory nerve, if it differs from the other portions and how, the general arrangement of its fibrillæ in the scalæ or galleries of the cochlea. To discover, if necessary, how sonorous impressions are received by the fibrillæ, how appropriated, how conveyed, and finally as to the agitations and emotions, mental, moral, psychic or emotional, aroused by them, and conveyed from one part of the physical body to the other.

1st. As to the nature of the nervous matter of the cochlea portion of the auditory nerve. We could only hope to obtain an answer to this by going back to the cerebral origin of this nerve, to question its sources and the nature of the organic elements that enter into its construction, and that can be found only at the "fons et origo" of its being. This we propose to do by-and-bye. But let us first look at the arrangement of its fibrillæ in the cochlea, and then we may be able, the more nearly, to estimate the necessities for their peculiar arrangement, as well as the nature of the nervous material of which they *must* be composed, in order to convey sonorous impressions. How does the arrangement of the cochlea auditory fibrillæ differ from that of the vestibule and semicircular canals?

According to authority, "The nerves distributed to the utricle and saccule penetrate at the points occupied by the otoliths, and the nerves going to the semicircular canals pass to the am-

pullæ, which also contain otoliths. At the points where they enter, in addition to the otoliths, are cylindrical cells of various forms, and also fusiform nucleated bodies, the free ends of which are provided with hair-like processes called *fila acustica*, which are distributed in quite a regular manner around the otoliths. In the sacs of the vestibule and semicircular canals nerves exist only at the *macula acustica* and in the *ampullæ*." So much for the nervous arrangement of the vestibule and semicircular canals, and now for that of cochlea. According to the same authority, "The cochlear division of the auditory nerve breaks up into a number of small branches, which pass through foramina at the base of the cochlea. They follow the axis of the cochlea and pass towards the apex, between the plates of the long spiral lamina, each passing through a polar cell, and the cells together form a ganglion, known as the ganglion of Corti." They then form a plexus and enter the canal of Corti." Now we have reached the critical point which, for want of a better term, let us call it the *locus auditorius*, or the place of hearing, and it is here that we find the "organ of Corti." What is the organ of Corti?

#### THE ORGAN OF CORTI.

What is the organ of Corti? Stripped of the anatomical verbiage and redundant nomenclature that one finds in the books in the description of this portion of the cochlea, with which we don't propose to burden the reader's memory, and of which, indeed, the more one reads the less one knows, "enough to puzzle a Philadelphia lawyer," as the saying goes, and, in some descriptions, we defy even him "to make head or tail of it," we will, in as few words as possible, endeavor to sum up the elements entering into the construction of Corti's organ, declared by physiologists to be the true instrument of hearing. The name "organ of Corti" has been given to a series of pillars or columns or rods, and estimated by Corti to be twelve thousand in number. Beginning at the base of the cochlea and extending to its apex, there are two rows of pillars or columns or rods called the pillars or columns or rods of Corti. There is an external row and an internal row, the former, the longer, and of more delicate structure than the latter, both increasing progressively in length from base to apex of the cochlea, the outer rods becoming ultimately twice as long at the apex. They are arranged like the strings of a harp, the base of each rod resting upon the basilar membrane, while their upper extremities are united and held together by a common membrane, the "membrane tectoria." Thus a series of arches is completed, with an interval between the rods. *At the base of each pillar or rod is a nucleated cell. To this fact we wish to call especial attention, as upon it hangs whatever of truth there may be in the theory we pro-*



pose to offer as to the part played by the organ of Corti in this department of the special sense of audition!" Besides the rods, there are rows of hair-cells arranged in several rows from which proceed hairs or cilia, as they are called, and they are in close relations with the rod, another notable fact, to which reference will be made again when we consider the connections of the auditory filaments with the rods of Corti's organ. According to Hensen and Waldeyer, the cilia are twenty thousand in number.

Lastly, all of this auditory apparatus is bathed in Breschet's endolymph from base to apex of the cochlea; still another notable fact for future consideration. Thus, in a nut-shell, the reader has laid before him Corti's organ and all its necessary auditory adjuvants. Our next step must be in the direction of ascertaining, if possible, the relations borne by the filaments of the auditory nerve to Corti's organ, and therein is the pith and kernel of our argument. The books tell us that the anatomical relations between Corti's rods and the auditory nerve filaments are not definitely settled, and some authorities deny the existence of any association at all. This being so, it is left to us to do as before, and hazard a conjecture upon this important and interesting inquiry. We take the liberty of thinking for ourselves. Every man has the right to do that, if he but think aloud and give to his thoughts air and freedom. We recognize no man's authority as absolute in the solution of these wondrous mysteries of the human body, a numberless host of which still remain unsolved. We are not of those who think and believe, as did the noble of Old Rome, who, enwrapped in his "toga virilis," stroked his patrician beard and said, "civis Romanus sum," "I am a Roman citizen," and that is the be all and the end all, and beyond me there is nothing. Or like the self-complacent Neapolitan who, in his patriotic fervor, hugged himself with "Veduti Napoli, e poi morir," "See Naples, and then die." Or, again, the mighty Louis of France, who, in the plenitude of his power, and the arrogance of his regal dignity as anointed king, declared, "L'état c'est moi," "I am the State." No! Nature has implanted in the secret places of the human ear certain organs whose purposes are not known, so the books tell us. Shall we rest content with that and abandon the effort to try and discover what Nature means? There is a method and a fixed purpose in all her works, and she appeals to man to explain those purposes. Shall we turn away and not heed her appeal. No! a thousand times, No!

**Vale Obesity.**—Dr. F. I. Miller says he prescribed phytoline to a patient weighing 300 pounds, in ten drop doses after each meal, without restriction in diet, with a loss to the patient of ten pounds the first month, twenty pounds the second month, and the same the third month, in all a loss of fifty pounds in three months.

## MEDICAL JURISPRUDENCE.

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### THE IDENTIFICATION OF BLOOD.

WHEN blood stains are found upon the clothing or weapons of a person accused of homicide, it is not unusual to find him accounting for the same with a claim that he has been engaged in butchering cattle, killing a pig or handling game. In such cases it becomes important to ascertain the character of the blood, in order to determine, if possible, the truth or falsity of the explanation.

The fluid of the blood, it appears, contains a large number of corpuscles. They are counted and measured by science, which commonly holds that the blood of an adult man contains 5,000,000 red corpuscles in each millimetre. The average diameter of the human red corpuscle is still a subject of discussion, scientists differing in their opinions from 1-3200 of an inch to 1-3500 of an inch. Welcker gives the average breadth as .00774 mm., and Elsberg, nearly agreeing with Welcker, fixes the mean diameter at .0075 mm. For purposes of identification, then, human corpuscles are to be compared with those of animals, which, according to Gulliver, vary from 1-3540 in the dog to 1-6366 in the goat. Satterthwaite, a recent writer on histology, gives the following averages: Dog, .0073 mm.; cat, .0065 mm.; rabbit, .0069 mm.; sheep, .0050 mm.; goat, .0041 mm.; elephant, .0094 mm.; pigeon, .0147 mm.; chicken, .0121 mm.; duck, .0129 mm. This shows little variation between the corpuscles of human blood and those of the dog, the cat and the rabbit; while there is a considerable variation between it and that of the elephant, the pigeon and the duck.

It is therefore possible for science, in some cases, to show whether the story of the accused is true or false, the value of the testimony depending upon the circumstances of the particular case—the blood to be compared and the manner in which the expert has done his work. On this latter point we quote from Satterthwaite's "Manual of Histology," p. 36:

"Measurements of single corpuscles have no value in determining the particular animal from which the blood has been obtained, and this is a matter of prime importance in medico-legal cases. It is common, therefore, to make a hundred or more single measurements, and then take the average of them. And yet this figure may vary considerably in different individuals, or even in the same one. In the blood of the puppy, for instance—the size of the dog's corpuscles being very near that of a man's—a recent observer found that the average diameter of fifty corpuscles varied only two millionths of an inch from

a like average of fifty taken from his own blood. In another instance, taking forty from a puppy, he found that the average differed only seven millionths of an inch from a similar average of his own."

Another important element seems to be whether the blood measured was recent or dried. On this subject Taylor's "Medical Jurisprudence," p. 307, says: "When blood is dried on clothing and it is necessary to extract the corpuscles by means of a liquid of a different nature from the serum, we can not rely on slight fractional differences, since we can not be sure that the corpuscles, after having been once dried, will ever acquire, in a foreign fluid, the exact size which they had in serum. Medical evidence must, therefore, be based in such cases on mere speculation. . . . There are no *certain* methods of distinguishing, microscopically or chemically, the blood of a human being from that of an animal when it has been once dried on an article of clothing."

Those who are accustomed to make chemical and microscopical examinations of blood and blood stains are, of course, allowed to testify in the courts whether human blood can be distinguished from animal blood, and, if so, whether a particular blood stain was made by human or animal blood. Such evidence has been received in numerous cases, and without objection. And experts may illustrate their testimony touching the properties of human blood, as ascertained by chemical tests and microscopical observation, by the use and exhibition to the jury of a diagram. In the *State vs. Knight*, 43 Me., the court said: "It would be very difficult for an expert of the most accurate and extensive observation to exhibit in language with precision, so as to be understood, those delicate appearances which are appreciable only by the sense of vision. Nothing short of an exact representation to the sight can give with certainty a perfectly correct idea to the mind. A diagram approximating in any degree to perfect representation, when exhibited by one qualified from knowledge and experience to give explanations, may do much to make clear his testimony without danger of misleading."

The question has been raised in several cases whether ordinary witnesses may testify as to blood stains, it being objected that no one but a chemist is qualified to state whether stains, apparently made by blood, are really blood stains or not. Such objection seems never to have been sustained in a single instance. And the rule is that ordinary witnesses are competent to testify that they observed spots of blood upon the clothing, etc., and no chemical analysis of the substance supposed to be blood is necessary.—*People vs. Deacons*, 109 N. Y., 374.

In considering the case just mentioned on appeal, the court said: "The testimony of the chemist

who has analyzed blood, and that of the observer who has merely recognized it, belong to the same legal grade of evidence; and though the one may be entitled to much greater weight than the other with the jury, the exclusion of either would be illegal. Either party in the present case had the right to resort to microscopic or chemical tests, but neither was bound to do it and neither can complain of the other for the omission. The affairs of life are too pressing and manifold to have everything reduced to absolute certainty, even in the administration of justice. Microscopes, chemists and men of science are not always at hand, and criminals are neither anxious to court observation nor careful to preserve the evidences of their guilt."

But in *People vs. Gonzalez*, 35 N. Y., the court said that the question whether the blood is human blood or the blood of an animal, would seem to be one of science requiring the testimony of experts.

It is sometimes very important to determine whether blood stains upon clothing were occasioned by blood flowing upon the outer or upon the inner surface of the fabric. If caused by blood flowing directly upon the outer surface of the fabric, the coloring matter of the blood which is suspended in the blood will, of course, remain on the outer surface; whereas it would be on the inner surface of the garment if it came from within. It was therefore held, in *State vs. Knight*, 43 Maine, that one who is qualified by chemical observations and experiments, may testify whether a blood spot upon a garment could have been occasioned by blood flowing directly upon the outer surface thereof. And it was held in *Commonwealth vs. Sturtevant*, 117 Mass., that an expert may testify as to the direction from which a blood stain came, as, for instance, that it came from below upwards. But in *Dillard vs. State*, 58 Miss., where it was proposed to ask the experts to give their opinions as to the relative positions of the combatants at the time of the difficulty, as indicated by blood upon the shirt, with a view of showing by the blood marks that the prisoner was probably prostrate on the ground, and deceased on top of him when the stains on the shirt were received, the question was excluded upon the ground that it did not involve any matter of science or skill, and that the jury must judge for themselves.

It would seem from the foregoing, that both the scientists and the courts have regarded it as possible to distinguish human blood from that of certain animals, though not from *all* animals. This question was raised in the famous Cronin case, at Chicago—and the expert testimony in that case tends to throw doubt on the whole matter, and to show that the former theories on this subject are erroneous. A portion of that testimony is here given, as being intensely interesting, to both the medical and the legal professions.

Professor Walter Haines, of the Rush Medical College, testified that there was no chemical test by which a person could accurately determine what kind of blood given specimen was; whether it was the blood of a bird or the blood of a mammal. The state of health may influence the size of the blood corpuscles. "Writers state that in some classes of disease the corpuscles are frequently much larger than they are in the normal condition. The corpuscles may vary in size; some of them average very closely. In an infant child the corpuscles are larger than they are in the adult. They are larger in the young of any animal than in the blood of the grown animal. Corpuscles in the infant are considerably larger than in the adult. They (corpuscles from ox blood) can not be distinguished by inspection from that of a man, at least I don't undertake to do so."

Henry L. Tolman, a microscopist, testified: "From the examination made by me, I should say that the blood was human blood, partly because the average of all these measurements bring it above the generally established average of human blood, which is about 3300 or 3350th of an inch; and second, because the presence of the hair adds very strong confirmation to that view. \* \* \* The effect of disease upon the size of the corpuscles, is to shrink them and change them in color, sometimes, in one or two cases it increases their size. I have examined corpuscles taken from a human being in various kinds of disease."

William T. Belfield, M. D., stated he was able to determine what the character of the blood was within certain limits. The nature of the blood he determined by the size, shape and structure of the so-called corpuscles. That the blood corpuscles examined by him in this case were such as might be derived from human blood. "There are several wild animals which furnish corpuscles very closely approximating to that of man—the opossum, the monkey, kangaroo, seal, beaver, porcupine, wolf; and then two domestic animals, the dog and the guinea-pig." The figure usually given for human corpuscles is 3,200 to the inch. The size varies somewhat; sometimes it may be 3,150 to the inch, but generally speaking we say 3,200 to the inch, a little more or less, in different individuals. In guinea-pigs, we say in round numbers, 3,400 to the inch.

Professor Marshall D. Ewell, M. D., of the Northwestern University, stated it as his opinion that, in the present state of science, it was impossible to determine, in the case of a specimen of dried blood, by the measurement of the blood corpuscles, anything more or further than the mere fact that it was the blood of some mammal. He said: "I am very decidedly of the opinion, judging from my experience, that in the present state of science it is impossible to determine certainly, even under the most favorable circum-

stances, that any given specimen of fresh blood is human blood. I have examined the blood of quite a number of patients under various diseases to find out the effect of the disease upon the diameter of the blood corpuscles. The disease may have the effect to enlarge the corpuscles; that is, to make their average considerably larger than that which is assumed to be the average size of the human corpuscles, or it may have the effect to diminish the size of them."

Professor Harold Moyer, of Rush Medical College, testified: "The effect of disease in a human being is to vary greatly the size of the corpuscles, making them either larger or smaller. A child's corpuscles are larger, as a rule, than are adults. In the present state of science it is impossible to determine with certainty, even under the most favorable circumstances, that any given specimen of fresh blood is human blood. There are a number of animals whose corpuscles approximate in size the corpuscles in human blood; their structure is identical. There are two or three animals whose corpuscles are larger than those in man—the two-toed sloth, the whale or the elephant. The closest approximation is found in the blood of a dog, the guinea-pig rather closely, and the rabbit not so closely. There are others, I think, but I can not mention them now. The average number of corpuscles to the inch in a rabbit is, I think, 3,800. In the human blood I do not think there is any absolute average; there is an average recognized of 3,200 or 3,250 to the inch. The corpuscles of a puppy are larger than the human corpuscles. It is impossible to distinguish in an adult dog the blood corpuscles from those of a human being."

Lester Curtis, M. D., testified: "In the present state of science it is possible to determine accurately by the measurement of blood corpuscles from a specimen of dried blood nothing further than the mere fact that it is the blood of some mammal. There are two main methods of determining whether any fluid is blood or not; one is by chemical examination and the other is by the microscope; chemically the human blood corresponds exactly, I believe, with that of all mammals—all animals that suckle their young; also animals like frogs and fish. The chemical composition is slightly different in frogs and fish. But all mammals have blood, as far as known, of identical chemical composition; that leaves only the examination with the microscope to identify them, and the corpuscles are so nearly alike in different mammals that it is very difficult, if not impossible, to distinguish between them. The corpuscles vary in size somewhat in different mammals within natural limits. I believe some observers claim that they can identify the blood of a sheep, possibly that of an ox; distinguish it, at least, from the human blood by examination with a microscope and by measuring



the corpuscles, but the best and most conservative of observers are inclined to doubt that very seriously. There are a good many animals which it is certainly impossible to distinguish between. From my own observation and experience I would not dare to say, when blood is dried, whether it was the blood of an ox, a sheep, a horse or a man." He also testified that disease might change the diameter of blood corpuscles.

This testimony in the Cronin case, given above in detail, shows the growing tendency of scientific men, to doubt their ability to identify blood corpuscles; and the drift of opinion in the same direction is further shown in the Borden case, at Fall River, Mass.

#### DREAMS AS EVIDENCE.

Under the above title, in the May number of the *TIMES* (1892), a curious incident of the McDonald will case, in Indiana, was related. The case was based upon the allegation of the caveators that the will offered for probate was forged. A young lady residing at Washington, D. C., a friend of the family, had dreamed that she saw a man and woman at the home of the testator in Indiana, engaged in the execution of some written instrument, under circumstances indicating wrong. Upon the relation of her dream, on the occasion of a visit to the McDonald family, she was confronted with a man who had become insane and was confined as a lunatic, and unhesitatingly identified him as the man in her dream. He had been a confidential clerk of Senator McDonald, the testator, and at the time the action was brought, it was alleged that the dream had played a conspicuous part in inducing the bringing of the suit.

Under date of February 17, 1893, the news columns of the *Daily Press* contain the following: "Noblesville, Ind. The jury in the McDonald will case, after being out all night, this morning returned a verdict for the plaintiffs, Malcolm A. McDonald and other heirs of Senator Joseph E. McDonald. The practical effect of the verdict is to declare that the will filed for probate by Mrs. McDonald is a forgery; which was the theory upon which the plaintiffs rested their case. Senator McDonald left about \$80,000 worth of property, all of which under the broken will was bequeathed to Mrs. McDonald, except some small legacies. As the case now stands, the widow will receive one-third of the estate, as no other will exists. The controversy will be carried to the Supreme Court."

We regret our inability to see the evidence, given in this case; and confess to some curiosity as to whether the "dream" was admitted in evidence.

Dr. C. H. Hughes, of St. Louis, Mo., chairman of the Section on Diseases of the Mind and Nervous System, Pan-American Medical Congress, to be held in Washington next September, invites contributions to his department.

#### COLLOQUIAL DIALOGUE ON ORIFICIAL PHILOSOPHY AND CHRONIC DISEASES.

BY WM. M. DECKER, M. D., KINGSTON, N. Y.

YOU slept soundly last night, and awoke this morning in excellent health and spirits. What took you through the night? What kept you alive, and brought you into another day strengthened and restored in mind and body, with the mud of life deposited—the rile of the previous day? It was the operation of the involuntary part of your anatomy—the involuntary machinery of life. It sleeps not, it runs not down, until the soul parts company with the body.

What is it, that sleeps not when we sleep, that involuntary-self not under the control of our will?

Leaving out the natural God in us—the spirit back of all life, we answer, the sympathetic nervous system; and a system of muscles, called the involuntary muscular system, which is operated and controlled by the sympathetic nerves; and, to this add, the various processes of life under the influence of those two systems.

How about breathing, doctor? We can not live without air.

True; but respiration comes under the processes of life referred to as involuntary. We continue to breathe when we sleep, for sleep is only nature's anæsthetic; and "the sense of the want of air" seems to be telephoned to the center of respiration over the sympathetic nervous system.

But my heart, doctor, it is the beating of my heart, which sustains me when I sleep as when I wake.

Yes, but the heart is an involuntary muscle. Its action is not subject to our will; and the circulation of the blood would not go on without the sympathetic nerves. My friend, God is in every heart-throb; and we live by the nerves that are sympathetic.

Sleep is a miracle; and every sleep would be a death were it not for the nerves that sleep not. We rise from our couch, after a night of sleep—after a period of lethargy, and hail the morning. It is a veritable resurrection of life. We live again. We are born anew.

I see your first answer was comprehensive; but pray tell us more about the independent, self-acting processes of life, going on within our bodies, run by the sleepless sympathetic nerves?

The vital, involuntary processes of life, over which the sympathetic nerves preside, are digestion, the circulation of all the fluids of the body, nutrition, excretion, secretion, waste and repair of all the tissues of the body, etc., so that the involuntary man is the real man of life.

This is a revelation indeed; but how does the sympathetic accomplish this work?

The sympathetic nerves bring about those amazing results as follows: The blood, the lymph, the fluids of the body, and the commerce of the system, that which is taken on and that which is given off, the sweat, the milk, the bile, the urine, the gastric juice, every secretion and excretion of the body is carried on through *tubes*. And those tubes are capable of contraction, expansion, and propulsion (peristaltic action) by reason of the involuntary muscular tissue, before mentioned, which surrounds the tubes; and by which their contents is forced along. But, back of these involuntary muscular tubes—the channels of the body, the high-ways and by-ways of life, there is a presiding and regulating force—it is the sympathetic nerve force. That system of nerves has its finger-tips, so to speak, on the tubes of the body, on the blood-vessels, the capillaries, which are the extreme ramifications of the blood-vessels, at which point the blood gives over to the tissues, and all the various organs, its food, or nutritious freight, and receives in turn effete and waste material—tissue waste, to be eliminated from the body. It also has its finger-tips on the stomach, the intestinal track, etc., and it plays upon those hidden and vital processes of life with more delicacy, and far greater precision, than the manipulation of a piano by the most skilled musician. But we comprehend it not, for it is beyond the control of our will; and there is no murmur, no jar in all that wonderful, unconscious, superhuman, involuntary act. Therefore, whether we wake, or sleep, the blood circulates, nutrition goes on, the bile is secreted, etc., and waste materials are conducted to proper outlets. Why? Because of the muscular action of the tubes, and the nerve force, which operates them. Hence, we not only live by the sympathetic nerves, but by peristaltic action in the involuntary muscular tubes, as we declared in the early part of our discourse.

Light is dawning, doctor, and I am intensely interested, please go on.

You are a faithful listener. To such it is a pleasure to speak; and, since you wish more light, we will go on from dawn to day, into high noon of this philosophy.

Let me call your attention to some cases. You see that maiden blush? You see that consumptive's hectic flush? That is the sympathetic influence acting on the tubes; and the tubes now referred to are the blood-vessels. The action in the one case is normal and healthful; in the other, abnormal and diseased. Then there is the pallor of fear, or anger, and the pallor of chronic and nervous diseases, all due to sympathetic nerve influence on the tubes. That influence will congest, or pale a liver, a stomach, a brain—any organ of the body, as it does a face, according to the cause acting on the sympathetic nerves. The causes

acting on those nerves, so far as the blood-vessels are concerned, either contract or dilate the blood-tubes, thus lessening or increasing the circulation of the blood, and the blood supply; and thus the blush, or pallor; and thus the nutrition, or starvation of a part, according to the nerve influence, which nerve influence differs with the cause acting on the nerves.

Causes, acting on the sympathetic nerves distributed to involuntary muscular tubes, or channels of the body, other than blood-vessels, operate in a like manner—accelerating or retarding peristalsis; increasing or diminishing the secretions and excretions of the body; making the skin moist or dry; augmenting or lessening the flow of urine; rendering the liver torpid or active; and so on throughout the entire realm of involuntary tubular action, whether in gland or organ or tissue of the body, and whether the tubes convey fluids or solids.

From what has been said, it is evident, that whatever disturbs, prevents or perverts, irritates, stimulates, depletes or lessens the natural force and influence of the sympathetic nerves, must render the action of the involuntary muscular tubes abnormal, and so modify the circulation of the blood and other fluids, check the elimination of waste and poisonous materials, impair nutrition, disturb the processes of life, and wreck our health; for all these functions of life depend on the tubes. Hence, we may define health to be normal action; and disease, abnormal action of the tubes. Again, it appears, that we live by peristaltic action, and healthful peristaltic action depends on a natural expenditure of sympathetic nerve force.

Thus far we have been considering, chiefly, the action of the nerves on the tubes in health; and how the tubes involuntarily carried on the processes of life—involuntary life, our vegetable life, so to speak, or plant life, or tree life, for it goes on without our will, as much so as the growth of a tree or plant; and, as we shall see later, as unfeeling, too, as a vegetable.

We have also given the scope of the sympathetic nerve influence; and the scope of tubular function, and have attempted to make clear, that a weakened and depleted nerve force would cause abnormal tubular action (peristalsis), which in turn would cripple the functions of life, and so cause ill-health. But the causes, that deplete sympathetic nerve force, that produce ill-health, and originate diseases, have not yet been considered.

We must first study perfection in order to detect imperfection. Without order there would be no disorder; and so a knowledge of what constitutes health is necessary to an understanding of disease. We have given you a view of the involuntary machinery of man in its perfect condition; and have called your attention to the var-

iations in effect on life, whether the machinery is acting in order or out of order; but what throws it out of gear, and how is it brought about—that has not been explained to you.

In showing up the machine, and its normal operation, we reasoned from the nerves to the tubes. That was in the direction of health. But in showing up the *causes* of abnormal operation we must reverse the order; and reason from the tubes to the nerves. That is in the direction of disease. Health is the action of the nerves on the tubes; disease the action of the tubes on the nerves, or some local cause in the tubes acting on the tubes and nerves.

There is no disease without a cause; and, we have said, that disease was abnormal action of the tubes, and that it operated from without in; therefore we should expect to find the first cause near the surface of the body in a tube; and so it is. First causes are found located at the points of entrance to the body—at the mouths of those tubes which have an external opening. Hence, it becomes a principle in orificial philosophy, that "the irritation of an organ begins at its mouth." Now, reasoning from local, first causes, through a chain of subsequent causes, to ultimate effects, we find the domains of involuntary life invaded in the following order: 1st, a local cause at or near the mouth of a tube, acting on that tube; 2d, the tube in turn acting on the nerves which run to it; 3d, those nerves as part of the general system of sympathetic nerves, effect that entire system, and so long as the first cause exists, all the other dependent causes continue in operation; and thus (4th) there is constant and excessive drain and depletion of nerve force, or energy, not only to the organ, or parts first involved, but extending more or less over the entire domain of sympathetic nerve function, which (5th) disorders, as we already know, the circulation of the blood, nutrition, digestion, excretion, etc.—all our vital, essential, involuntary life. Such are the remote and final effects, through the sympathetic nerves, on the tubes, other than those involved at the starting point. And here let me add, that the first cause and its secondary, remote effects, as above illustrated, afford us an excellent picture of chronic disease, and of the so-called nervous diseases; and it also explains nervous prostration.

Nearly every day I hear of some one that has nervous prostration. What is it, doctor?

There is such a condition of the human system called nervous prostration, and it is often met with; but the nerves are not responsible for all the so-called nervous diseases. In many cases of nervous prostration there is no disease of the nerves—strange as it may seem. Nervous prostration means "excess of nervous irritation," and the irritation usually originates from local causes, which go undiscovered, and the innocent

nerves, which, like telegraph wires, merely transmit impressions received, and which act normally if not molested, are falsely charged with the deeds perpetrated by clandestine invaders and local operators. The so-called nervous diseases "are often, very often, falsely so-called." Purely nervous diseases, by that is meant diseases originating in the nerves, are very uncommon, indeed. Volumes are written on nervous diseases, and the most of such writings are misleading and false to that extent, that they need revision and correction.

Dr. E. H. Pratt, the father of orificial philosophy, affirms, that, if his methods of diagnosis and treatment were faithfully and properly carried out in the asylums of this, or any other country, fully one half of the insane patients would regain their health. That seems to be a conservative statement of Dr. Pratt's, for in the light of orificial philosophy it is evident, that many of the so-called nervous diseases have been misunderstood; that much that was honestly written is false, and that the doctors too often cloak their ignorance by declaring a disease nervous.

There is no tissue in the human body so seldom diseased as the nervous tissue. It may take the medical profession generally many years to grasp that truth; and, when they do grasp it, what a shrinkage there will be in the literature on insanity and nervous diseases.

Yes, doctor, that will be a day of nervous innovation and nervous irritation—but my fondness for interrogation prompts me to ask you another question. Did you say, that all those profound and varied alterations in health, in which the involuntary tubes and sympathetic nerves were actors, and which you characterized as chronic diseases, were brought about unconsciously? Yes, and the reason is, that the sympathetic nerves are incapable of pain. And this reminds me of my promise, which was to comment later on the unfeeling character of the sympathetic nerve. You may pinch, cut, or burn a sympathetic nerve, and there will be no pain. There may be excessive waste of nerve force without pain. So it is with the sympathetic nerve. The nerve force is often depleted for a long time, and to that extent, that the involuntary functions of life are disordered. Nearly all chronic diseases are produced by *local* causes acting through the tubes upon the sympathetic nervous system; but the patient does not know of the cause, and can not locate it, for the very reason that the sympathetic nerves complain not—there is no pain, hence, the local trouble continues to act on and on for months or years, undiscovered, and the general health is undermined. Chronic patients suffer most in parts remote from the seat of disease. They complain of reflex troubles, or symptoms; but the point at which sympathetic nerves



are attacked, and which is the starting point of disease—the first link in a chain of disorders, that suffers not.

Doctor, of course you are aware that there is much pain in the world, how do you account for it?

It is the voluntary part of a man that suffers. We have a double organization. We have two sets of nerves and two sets of muscles, and we are otherwise doubly organized. The sympathetic nerves preside over the involuntary part of man, and they are not subject to pain; but the voluntary part of man, that part of man that obeys his will, and is presided over by the cerebro-spinal system of nerves, which include the brain and spinal cord, that is the painful part of man. That is the part of man that cries and pains and aches. And the wailing nerves and the silent nerves join hands; and all there is of physical man passes back and forth in that nervous clasp—in that union of the voluntary, with the involuntary nerves; but we must confine our remarks to the sympathetic nerves, the silent nerves, which are the principle nerves involved in chronic diseases.

All this philosophy is new to me, doctor; but I must confess it is fascinating and convincing. It opens up a new field for investigation and treatment, and exposes the rubbish and errors in medical literature and practice, and thus partakes of a reformation. I favor reforms; but excuse me, sir, I prefer to have you do the talking. Will you explain more fully how the nervous force is overdrawn?

To do this some preliminary statements are necessary, and that will bring you to the gradual unfolding of the point in question.

The silent, or sympathetic nerves, lie deep in the body, and are distributed to the involuntary muscles, which also lie deep in the body. The complaining nerves (cerebro-spinal) are superficial, and everywhere come to the surface; and they are distributed to the voluntary muscles, which are the outside muscles of the body. The outside, or voluntary muscles, which walk the body and talk the body, will contract and relax at will; but the inside and involuntary muscles act differently. They also contract and relax in a healthy, normal condition; but, when irritated, they contract and contract and continue to shut down without relaxation, until the nerve tips, that know no pain, and which supply that part, are pinched and held as in a vice. This prolonged and incessant effort on the part of an involuntary muscle taxes the entire system. It is not merely the nerve filaments in the grasp of that contracting muscle that are effected; but the effect extends over the entire sympathetic system, and the nervous force is lowered generally. An over-draft of nerve force going on from day to day results in lowered vitality, which effects the general health. Again, nerves may not be pinched by

contracting muscles, but be constantly prodded, or disturbed, and irritated by various local causes, so that their function and influence are weakened by loss of nerve force, and a like effect to our health follow.

You will have a clearer understanding of this point if your attention is called to a similar condition in the voluntary muscles, producing a loss of nerve force. If you were to hold your arm out in one fixed and constant position for a long time, it would become tired; and the arm not only becomes tired, but it tires your whole body. Exercise, which is contraction and relaxation and change in the position and direction of force, is healthful, if not excessive, but a fixed and constant effort, whether voluntary or involuntary, is fatiguing, injurious and disease producing.

The sleepy, complaining, cerebro-spinal nerves tell us when the voluntary muscles are tired, and they obey our command, and let up. But not so the sympathetic nerves; they never squeal, notwithstanding the involuntary muscles, by incessant contraction, or constant irritation, at one or more points, are wasting the nerve force, disturbing the processes of life and causing ill-health.

Again, let it be impressed on your memory, that chronic diseases thus originate; and thus is brought about nervous prostration and premature general debility.

Is it any wonder, that such grave disorders get the best of us, when we are not warned of their approach because of the absence of pain? The point, or points, involved, the first and real cause of ill-health, the source of irritation, the nerves that are pinched or overtaxed, can not be located by the patient, and are too often overlooked and undiscovered by the doctor, all because there is no pain, or because the deceptive alarms, sounded in other parts of the body, call us away from the concealed and silent thief, who is robbing us.

Disease becomes chronic because it is not cured; and it is not cured because the cause is not discovered; and the cause is not discovered because it starts in the tubes surrounded by involuntary muscles, and affects the painless sympathetic nerves.

Physicians, generally, have given little or no attention to the involuntary side of man, to the God-word side of our physiology, which is the most important, and the vital part of man. Therefore, they have a very imperfect knowledge of reflex nervous action. That physician who treats reflexes—that is, the secondary symptoms set up here and there about the body—as the primary cause of disease, because they sound the alarm, is on a wild-geese chase; and there are many wild geese in medicine, or there would not be so many chronic and so-called incurable cases.

As physicians we are so much absorbed with the voluntary man, that we are too apt to forget

the involuntary man; but remember this new commandment, that, notwithstanding our involuntary anatomy is wound up by the Giver of Life, to run for seventy-five, or one hundred years, independent of our wills, and is not subject to pain, yet it may be, and often is, disordered, and those disorders may be intelligently corrected in one-half of the so-called incurable cases.

If that is true, doctor, and I have no reason to doubt it, orificial philosophy has come to stay, and it will prove a wonderful blessing to all mankind; but why is this unique and benign philosophy called orificial?

Hear me out. My explanation is not far off. The voluntary nerves, like shallow brooks, are superficial and noisy; but the involuntary nerves are profound; and, like deep waters, run still; but the silent nerves come to the surface at the orifices. The orifices are the openings, the gateways of the body. They are the portals through which all that enters the body, or is given off from it, pass in and out.\*

The orifices are peculiarly guarded and protected. They are abundantly supplied with a network of blood-vessels and nerves, and are provided with sphincter muscles, which close the orifices. These sphincter, or circular muscles, which guard and regulate the capacity of the orifices, are divided into two classes—voluntary and involuntary; and there are sphincters that are mixed, combining both voluntary and involuntary functions. The orifices of the body are also classified into upper and lower orifices, those of the head constituting the upper orifices; and they may be further classified, in a general way, by saying that the upper orifices are voluntary, and the lower involuntary.

Orificial philosophy does not embrace all the orifices of the body, but treats only of the lower orifices, for various reasons.

1. Because the lower orifices are involuntary, or semi-voluntary, as we remarked of some of the sphincters.

2. Because from the lower orifices the entire sympathetic system may be reached, for here are the outcroppings of the sympathetic nerves; and whatever effects those outcroppings, the influence, whether normal or abnormal, whether healthful or morbid, is carried back upon the entire nervous system.

3. Because the lower orifices perform various functional activities, which may be deranged, and, for obvious reasons, are subject to greater strain, more varied use, abuse, accident and disease than the upper orifices.

4. Because at the lower orifices the finger-tips of the silent nerves and the complaining nerves touch at a *naturally exposed point*, so that, at this border line, whatever drains the nerve force

of one set of nerves must drain the nerve force of the other. For example, external piles, or fissure, are very painful; and the pain racks the cerebro-spinal system of nerves; but those disorders reach the border line, and affect also the sympathetic system of nerves; and through the silent nerves, though they complain not, there is lost to the body a far greater amount of nerve force than by the grumbling, cerebro-spinal nerves.

5. Because the adynamic, working nerve center of the involuntary machinery of life is "antipodal in place and function" to the voluntary center, and, therefore, it is located at the other end of the spinal chord from the head, not far from the lower orifices.

Such are the chief reasons why orificial philosophy is restricted to the lower orifices; and, by this time, you must understand why the philosophy is called orificial. But, if the light of orificial philosophy, and a prolific source of chronic diseases, have not already dawned on your mind, it is only necessary to add, that "disease begins at the mouth of an organ"—at the gate-ways of the body; and when the lower orifices and their tubes are involved, the effect is carried back on the involuntary life, over the non-complaining sympathetic nerves, which act from below upward, so that the various local causes, acting unconsciously, it may be, produce functional disorders of the heart, stomach, bowels, and nutrition is imperfect, waste material is not completely eliminated, repair goes on sluggishly, and the various processes of life under the control of the sympathetic nerves are thrown into disorder, and there is discord in the various parts of the system, varying in each case as the conditions vary, and there is no respite, no relief from this living death until the hidden cause, however trivial, and it often is very trivial, is discovered and removed.

Treating the remote causes, those which cry out and give the alarm, will not put out the fire. It burns on, in the involuntary tubes and sympathetic system of nerves, which know no pain, and the nervous force of the patient is consumed.

I understand you perfectly, doctor. And now I must bid you good-day; but, before leaving you I wish to say, that your discourse on this new philosophy has been both edifying and instructive; and I sincerely thank you for the revelation of truth which you have given me. I now realize as never before, that "the highest study of mankind is man." And there came to me, also, this truth—God has given us half ourselves, the other half is in his keeping. The half that is in God's keeping sustains the prodigal half that is in our keeping; and while we rule this house, not made with hands, and get it out of order, and all ordinary means for restoration fail, then orificial philosophy comes to our relief, and by unfettering the God-word side of man, bids us live again. Welcome to the world, that philosophy, which comes to bless and heal mankind!

\* The pores of the skin are orifices, and they must be included in so sweeping a statement; but hereafter our remarks will not include them.

## INDIAN CHOLERA.

BY HENRY N. AVERY, A. M., M. D.,  
MINNEAPOLIS, MINN.

## Part I.

THE science of medicine embraces the study and knowledge of nature, and of those arts which are conducive to the subsidence, safety, comfort and convenience of man, and if ever this application of our accumulation of experience and knowledge is demanded, it is in relation to what we may have presented to us another season in the form of epidemic cholera.

This disease has the honor of bearing an innumerable number of names, from Rice Disease to Typhoid Fever of India. One name will suffice to express all the different forms of this epidemic—characterized by vomiting, purging, great prostration and collapse—while the milder form found in temperate climates may be known as Summer C., Spasmodic C., Bilious C., British C., Cholera Sica (dry cholera), in which collapse and death take place without diarrhea, and it is of rare occurrence.

The different phases of these diseases some think are the individual types of the same disease—only the discovery of the comma-bacilli may determine the cases.

Since the year 1768, at Pondicherry, in India, when 60,000 lives were sacrificed to this pestilence, to the present time, anxiety, fear and consternation have followed the advent of what may be known as Indian Cholera.

In 1817 that Dr. Robert Tytler, of Jessora, a city near Calcutta, was called by an Indian physician, who had been seized in the night with violent vomiting and diarrhoea. The patient was moribund and this English physician was about to report the case as one of poisoning when he learned that some seventeen other cases had been reported at the same time and had quickly died. From this beginning 10,000 of the inhabitants fell victims in the next two months. This was the first known epidemic of cholera.

In 1818 some 25,000 died. Out of 18,000 soldiers in General Hasting's army, between Bombay and Calcutta, 9,000 died. In 1821 Java lost 100,000. Between this period in 1821 it raged with more or less violence, both in high and low altitudes and different locations. In 1830, in Moscow, between October and April, it raged with great violence. In Cario, 1831, 30,000 perished. In 1832 it destroyed 1-43 of the population. In this year it entered America through Montreal and Quebec. It ran through the United States, and in 1833 it reached Mexico. From this year to 1849 it prevailed more or less in Asia and Europe. In 1849 it again broke out in Paris, where the dead numbered from 700 to 800 a day. Some 10,000 fell victims. At this time a large part

of Europe suffered; 53,293 perished in England and Wales, exclusive of cases of fatal diarrhoea. At the close of 1848 it again entered the United States at New Orleans. In 1854 England, Ireland and Scotland were visited, 20,097 perishing. In 1866, during the German-Austrian war, more soldiers were killed by cholera than battle. At Bresleau, Germany, this year, 25-100 of the people were attacked, with 50 per cent. mortality. This was about the last general epidemic. The last outbreak in America was at New Orleans in 1873. Up to September 1, 1892, the deaths in the present epidemic are estimated to be, in Europe, 200,000; exclusive of Asia. In Hamburg in 1892 there were 13,238 cases.

It will be readily seen that no locality is exempt and that summer is generally the season of propagation. Although cold weather does have a tendency to check its progress, in the year 1830, at Moscow, between October that year and April, 1831, it raged with great intensity. The personal visit of the Czar to the hospital and to the sick seemed to inspire new life and confidence in the sick, and who were provided with comforts that diminished the intensity of the epidemic.

Almost all parts of the globe have suffered from the visitation of this scourge, only isolated spots, like the polar regions, being exempted.

Intercommunication by rivers, seas and the great land routes are the favorite means of conveyance. Many epidemics have been preceded by epidemics among poultry, as in France, Russia and Poland in 1832.

The presence of cholera does not exclude other epidemics, and during its prevalence operations have been attended with great mortality.

High temperature favors its development, but is not invariable, as some of the severe epidemics have been in winter. Low lying districts, with moist, cold soils, have been favorite breeding spots. In connection with this idea the sprinkling of streets in cities has been prohibited. It is evident the individual liability to disease, the introduction of the specific matter, are important factors in cases of cholera. This latter element may be by the alimentary canal or lungs. Cholera is transmissible by drinking water, clothing, masses of filth, by soil, different vehicles of transportation and individuals.

All races in every condition of life are subject to the disease. The rate of mortality varies but little, generally from one-half to one-third die. The ratio of mortality has not decreased even in the present epidemic, showing even in the latter part of the nineteenth century, with all our knowledge, it still maintains its old characteristics. No pestilence the human race has been afflicted with is so grave in its prognosis as cholera. The diagnosis of cholera is simple.

Cyanosis, asphyxia, suppression of urine, rice



water discharges, and great prostration, will diagnose the case from sporadic cholera, poisoning, gastro-enteritis, indigestion and asphyxia from the fumes of coal.

The power of life is so suddenly and fatally prostrated that the organs of the system become insensible, and the patient sinks insensible of pain into the arms of death. What is the cause of this disease that has produced riot, mutiny and the flight of whole communities, sacrificing upon the altar of death the rich and poor, high and low, in every inhabitable part of the globe?

Its etiology is uncertain to-day. The all-wise Creator has surrounded this disease with a mystery, that no human knowledge is able to penetrate. Scholl quotes Greesinger, in the *Weiner-Medizine Press*, of Vienna, October 26, 1891, as having shown that the specific cholera poison was the result of certain conditions of putrescence of organic matter, which have no connection with ordinary putrescence. The effect of this poison is shown in the destruction of the epithelium and the upper layer of the mucous membrane of the intestine. By its absorption it exerts its action on the entire organism, especially the circulatory organs.

The complex symptoms of cholera are not from loss of water and consequent thickening of the blood, but from toxæmia.

Hueppe, in the *Berlin Clinic*, March 3, 1891, says "that the infection of cholera is not by swallowing of the bacillus in food only, but that it may be inhaled, coughed up and afterward swallowed, as the bacillus may live a long time in a dry condition.

"A patient can not, however, become affected through the lung, thus proving that the infecting agent is not a blood parasite. The alkaline juice of the intestine is necessary to develop it, and the entire process of the cholera is in the intestine. This bacillus seems to have two lives, one of a robust nature when it is excluded from air in the intestine, and the other of a weakling in resisting the action of germicide agents, but, a short time after exposure it gains in resistance power, therefore the necessity of the immediate disinfection of the stools."

Hueppe thinks "that Asiatic cholera is certainly a miasmatic contagious disease, its epidemic character depending upon outside conditions.

"These conditions are numerous. The cholera patient may not convey the contagion, while the insidious and latest germs proliferated from these patients might. The body-carriers of the dead cholera subjects being seldom attacked, the bacteria of decomposition destroys the germ. It is not in the sick room that the cholera germ gets in its deadly effect, a certain number and vitality is essential for the germ to be developed in its destructive form, and this development is greater

in fluids than in the air. Hence, the waters of the soil and drinking water play an important, although not exclusive role, as vehicles. Cholera excretions are not the sole carriers of the germ, in fact, they may lack every element of contagion. Moisture being more prolific in the contagion than a dry state, it behooves us to look well to the condition of the drinking water, soil water and condition of the ground, even sprinkling of the streets should be carried on only under proper sanitary conditions.

"Marshy and malarial regions are favorable for cholera, because they are so well adapted for the development of parasitic germs. Low places, moist parts of cities, and dwelling houses with a high degree of dampness are all sources of development of protomycetes; great humidity of the soil, with an accumulation of ground water in the superficial layers, may be regarded as chief breeding factors of cholera germ."

Siemssen mentions an instance in Bresleau, in 1867, where a privy vault emptied by overflow to the surrounding soil, and infected a well not far off, and eleven died of the twelve inmates of the house. He sums up with these facts, "unclean lives, defected ventilation and crowding into narrow spaces, very much increases the chances of diffusion of the disease. The cholera germs are not only quantitatively increased in this way, but they find also the richest field for proliferation in the so favorable moist heat, and in the fluid saturated with ammonia, which nourishes bacteria much more effectively than where a part of the ammonia has already been converted into nitric acid."

Ernst says, Koch's results in 1884 were "a peculiar shaped bacillus (the so-called comma-bacillus, because it is curved) is found in the intestinal fluids, Peyer's patches, and glands of cholera patients, and in no other cases. These bacilli are one-half to two-thirds as long as the bacillus of tuberculosis, but much blunter, thicker, and with a slight curve. Sometimes two are joined together end to end, giving an S form, and sometimes there are long strings of six or eight, very much like the spirochæte recurrentis of relapsing fever. They can be cultivated in the meat-broth, milk, blood-serum, cooked potato, and best in gelatine specially prepared for the purpose (Nahrgelatine). When grown upon the surface of the later they present a characteristic form of colony, differing from any known to the observer. They form a glistening drop on the gelatine, and as their growth progresses they liquefy the culture-medium and gradually sink into its body, forming a cone-shaped cavity, with the colony in the center.

"They can be cultivated also upon an 'Agar-Agar' culture-medium, and this they will not liquefy. They grow best in a temperature between 30 and 40 degrees C. (86 to 104 degrees

F.) they will increase down to 17 degrees C. (62.6 degrees F.), but below this with great difficulty and very slowly, if at all. Their growth is very rapid, being complete in from two to three days. They will not resist drying more than twenty-four hours, and only as long as this when there are masses of the bacilli present. This organism seems to have no spores, and does not belong with the bacilli but with the spirilla.

"The organism was found only in the intestines of the cholera patients, and not in the blood or other fluids of the body. Repeated search failed to show its presence in any other form of gastrointestinal disease. The link in the chain of evidence connecting it with cholera as a specific cause—successful inoculation experiments—was at first wanting, but the announcement of success in this direction also has been made. The inoculation was made by introducing one one-hundredth of a drop of pure culture of the organism into the duodenum of rabbits and guinea-pigs, with the result of death in from one to three days with all the symptoms of cholera, and the discovery of masses of the bacilli in the intestinal fluids." These observations of Koch's are confirmed by Van Ermengem, of Belgium (*Recherches sur le Microbe du Cholera Asiatique*, Paris, 1885), in every particular, and he supports the assertion that the discovery of the organism either in the dejecta, or in cultures from the dejecta in doubtful cases, is diagnostic of cholera. The critics who claim to have found the comma-bacillus in the mouths of healthy persons are answered by proof of the difference in size, form, and behavior under cultivation of their organism.

Shall we say the comma-bacilli is the "primum mobile" of cholera, or the issue of degenerative changes. The question may not be satisfactorily answered until the grippe discoverer of Chicago shall succeed in trapping one of the commas in the messes of his bee-hive. There are no preventives against cholera. Sanitary precautions are the key-note in corralling the contagious effluvia of this pestilence. Modern authorities have set forth many suggestions, such as educational lectures should be given at every outbreak of cholera; they should teach hygiene, rules of conduct, necessity of disinfection, destruction of evacuations and soiled clothing, and the importance of drinking sterilized water; isolation of the sick, purifying suspected localities and keeping them so, removing all filth, separating crowded tenements in unwholesome tenements, and providing better food for the poor; good water and drainage are the essentials even above disinfectants. It would be eminently proper if compulsory hygiene could be taught in all schools.

It is well to bear in mind some points. No sudden and essential change can be made in the quality of our food without effecting the irritability of the bowels, therefore the utmost care

and discretion should be exercised in this particular when exposed to an attack of cholera. We should avoid everything that is hard to digest, as well as those articles that we know are apt to irritate the intestines and produce diarrhoea. A usual diet should be followed, providing it be a tolerably regular one, but by all means avoid overloading the stomach, and especially hearty suppers. Eating too much or too little are both injurious when exposed to cholera, even a less quantity than usual is desirable. Irritability of the stomach and intestines seem to be a great predisposing cause to the disease. No indulgence in stimulants, unless it be beer, should be allowed, the use of cheese and milk should be avoided.

When a person is in good health, as a general rule, he can take no medicine that will make him any less susceptible of the disease, but subjecting his organs to the influence of medicine, whilst in health, should he be attacked, the remedies will not then produce so prompt and so good an effect as if none had been previously taken, therefore the practice of taking preventives of cholera, at best a very doubtful, if not an absolutely pernicious custom, although a one per cent. solution of citric acid or one per cent. solution of vinegar kept in earthen ware may be used.

Whilst in health we need no medicine, but when once attacked with cholera no time should be lost in applying the best means to check it, and among the most important we think is quietness and rest, for which purpose let the patient retire to bed and remain there until fully recovered. That an intelligent quarantine and vigorous sanitary measures will serve to prevent the appearance of the scourge, while thorough disinfection and sequestration will prevent its spread after it has made its appearance. "That the disease is not contagious in the sense of being communicable through contact, and that this fact should be made plain to all." Strict attention to personal hygiene will greatly diminish its chances of attacking any single individual.

Fear, excessive fatigue, over-heating are to be avoided. If the disease appears in cold weather flannel belts should be worn around the stomach and bowels. Old age and infancy are most liable to suffer. The character of the epidemic has but very slight influence upon the prognosis.

We will now close this part of the subject by defining Indian or Asiatic Cholera as "an infectious disease, resulting from the entrance into the alimentary canal of a poison, which poison is probably a specific bacterium, whose life history has not yet been fully determined." We now come to the treatment of cholera, and at the onset I would distinctly state there is no specific for cholera.

Among the many remedies for cholera may be mentioned salol, strychnia, different forms of opium, capsicum, lysol astringentes, tannic acid

the best, five grains to one pint of warm water, with a few drops of laudanum as intestinal irrigation, the effect of which is to kill the bacilli and prevent the absorption of the poison by contracting the tissues, copper, arsenic, camphor, veratrum and all manner of choice mixtures. Boracic acid and peroxide of hydrogen as non-toxic antiseptic injections.

Now, I do not propose to set forth any specific treatment, believing that any treatment must necessarily be somewhat experimental, but desire to call attention to a few remedies that must claim our attention. If it has been decided that the stomach contents should be removed, then resort may be had to ipecacuanha. A few drops of mineral acid (sulphuric, nitric or hydro-chloric), largely diluted with water, may frequently be given. Ice may be given, sparingly, bland fluids, such as egg-water, gruels, mucilaginous drinks, rice, farina, can be resorted to after twelve hours of rest and abstinence. After two or three days such food as sago, arrow-root, Indian corn flour, rice, toast may be taken; green tea, pepper, salt, cinnamon may be allowed; if the diarrhoea returns another period of abstinence must be resorted to. These conditions should be carried out in a well aired room of even temperature in bed, the stomach and abdomen being wrapped in flannel. If cold, warm water bottles should be resorted to; turpentine or warm poultices may be applied over the bowels, if thought necessary, with aconite cuprum, veratrum, camphor, arsenic, robinia, as indicated.

Dr. Rieder, of the Episidorfer Hospital, Berlin, has used with much success in this last epidemic, he says, the subcutaneous table salt infusions, in the median cephalic vein, if too narrow, the saphena vein of arm was used, was frequently followed by happy results; this, he claims, is the best remedy of the present time.

Dr. Cantani, of Naples, claims four points in treating cholera:

1. The limitation of the growth of the bacilli in its intestines.
2. The destruction of the chemical cholera products in the intestines. These two might be called the abortive treatment.
3. Rapid elimination of the absorbed poison from the blood.
4. The rendering fluid of the already thickened blood of cholera patients.

And the chloride and carbonate of sodium infused as subcutaneous injections over the caecal region.

As a prophylactic agent, hydro-naphthol has been used, flushing the intestines; anti-cholera inoculation of cholera bacilli culture, creosote, lactic acid are recommended for the disease.

Dr. Rumpf, of Hamburg, says all the various vaunted remedies are useless. Our energies should be exerted in the period of diarrhoea and dis-

charges, for drugs are of little use during collapse. Dr. Alonzo Clark thought "the ganglionic nervous system that presided over the alimentary canal became paralyzed," so instead of the gastro-intestinal absorbants performing their normal functions, become reversed and the flood gates of the intestines are opened and gallons of fluid escape. It will be seen under these conditions large quantities of powerful medicine, either from above or below, would, if reaction does take place, kill the weakened subject. Hence, it will be seen how important for early treatment, while the absorbants are performing their usual functions. Treat the vomiting on general principles. Menthol and small pieces of ice have been used with success, bearing in mind that hot water, tea or peppermint water may be borne better than cold drinks.

In cases of collapse, Dr. Wendt says, "it is better to stop all medication and apply heat to body and friction." Samola urges "warm water sponging." Dr. J. C. Peters uses "unslacked lime wrapped in wet cloths." Dr. McClain says "the cramps are relieved by chloroform, five or six minims in water," others use hypodermic injections of morphine. During reaction the greatest care is essential; good nursing in every sense of the word is demanded, relapses are to be treated as a primary attack.

In concluding this part of the subject, bear in mind that bottling up the intestines with opiates and corks are futile, although injections of brandy one part, and coffee two parts, are recommended by some. Remembering as one has said, that cholera does not "come by Providence and go by medicine."

The period of cholera by incubation may be from one to twenty days, averaging two to five days, and that it may show itself in two ways, first, by inducing fully developed cholera; secondly by producing slight disturbances of which diarrhoea is its chief, and which may sooner or later culminate in the severest form of Indian cholera. The prodromic diarrhoea will be found in most cases. In epidemics of cholera, it is well to remember that cleanliness, white-wash, proper disinfectants, purifying all bedding, carpets, etc., of dwellings, using plenty of chloride of lime, carbolic acid, corrosive sublimate and sulphur are essential. If attacked go to bed, diet, check diarrhoea, drink a moderate amount of cold water or hold pieces of ice in the mouth and use hot bricks if necessary, and call a physician.

I desire to call attention to a few remedies before closing. The first is robinia pseudacacia, the common locust tree, the leaves and young branches being used. Dr. S. Lillenthal says of it, "there is not a remedy in the whole materia medica which has more clearly all the symptoms of cholera than robinia symptoms."

In comparing we find: The face congested and



deep red, and the head greatly affected; paleness and frigidity of the face, with great prostration, and desire to rub cheeks to give them heat and life; pale, gray, greenish, blackish face; wrinkled and hypocritic face, with pointed nose, sunken eyes and surrounded by dark circles; the skin of the face is tense, chapped, hard and rough; vomiting of bilious matter, gray or black and watery, with white flakes like curdled milk; stools of the same nature, and rapid loss of strength; enormous but easy vomiting in jerks; vomiting, with cerebral congestions, paroxysmal cough, sweat on the head, lachrymation, epistaxis and fear of asphyxia; repeated vomiting with strong efforts and sensation, as if all his bowels would come up and it seems to him as if his stomach and bowels were torn and hang loose; vomiting with diarrhoea, spasms in the extremities; chills over the back and extremities.

Pressure and constriction in the epigastrium; ardent thirst, labored respiration, sunken countenance and ashy face; extreme debility, great restlessness and agitation; vertigo, intoxication and somnolence. Diarrhoeic stools, black and fetid, or watery whitish, excessively frequent and generally involuntary, and accompanied by vomiting, with sensation as if the whole body would pass away through the stool. Heat and pressure in the epigastrium; cramps in the extremities; weakness and extreme prostration; horror against persons dressed in black; putrid emanations from the body; suppression of urine and fear of death.

#### ACONITE.

I will give two cases under this head.

"Corroborative evidence of Aconite in Cholera."

By C. W. Boyce, M. D., of Auburn: "During the summer of 1864, Dr. H. Robinson, of Auburn, was attacked with sporadic cholera. At the end of forty-eight hours he was in a state of collapse, and seemed to be rapidly sinking. No remedy relieved him until he received two teaspoonfuls of a solution of two drops of the tincture of the root of aconite in one-half glass of water. This revived him at once, and he was soon convalesced. Dr. R. vomited almost constantly, a green fluid, and passed from the bowels a fluid of the same color. He was cold, yet seemed to himself to be burning hot. There was thirst and restlessness.

"On August 28, 1864, Mrs. William J— was attacked with sporadic cholera. The symptoms progressed in spite of all remedies administered, until collapse came on. For twenty-four hours there seemed to be scarcely vitality enough to indicate life. The great characteristic of the case was a feeling or sensation of heat in the whole system, so great as to demand the removal of all covering."

"There was cold, clammy sweat; a sense of positive coldness to the hand of the spectator, but to the patient a sensation of burning; there

was excessive thirst, yet could retain nothing in the stomach. No remedy yet given had controlled the case in the least. Secale was not given. At this stage of the case, two drops of the mother tincture of the root of aconite was added to half a tumbler of water, and of this mixture two teaspoonfuls were given every half hour. Mrs. J— remarked in a whisper, almost as soon as she had swallowed the aconite: 'That has gone all over me.' She convalesced at once, and is certain that the aconite saved her life, and her physician is of the same opinion."

#### ARSENIC.

Poisoning occurring in the midst of an epidemic may be very difficult to detect, and, of all forms that from arsenic is the most so. Vertigo, derangement of the senses, depression, epigastric distress, and suppression of the urine, are common to both. Arsenical poisoning, however, has some special characteristics of its own, viz., in manifesting its symptoms almost at once after the ingestion of some food or drink, and in the persistent constriction of the throat and oesophagus. All doubts are at once removed when the character of the evacuations is established. At all times, foudroyant cholera is difficult to distinguish from this condition.

In 1868, Dr. H. M. Paine, of Albany, N. Y., relates a case cured with nux, arsenicum and veratrum. Dr. Cox mentions a case cured with camphor, one-tenth with friction, using warm spirits and water and camphor, four persons rubbing the person from one to two hours. The paroxysms yielding somewhat at the end of two and one-half hours. Improvement was manifested by restoration of circulation. A return of consciousness and a copious secretion of urine, which had been entirely suppressed for several hours. Dr. Randall relates a case the same year when camphor and cuprum were used, the patient was unconscious for two days, when she overheard one of the attendants say she was suffering from cholera—all symptoms returning with their former intensity. Phosphoric acid in first stage of diarrhoea is valuable. Phosphorous in rice water discharges, has proved successful.

For a routine practice, I would recommend the following: Place in bed, cover warm, with hot bottles around the body, vigorous rubbing with warm spirits and water. Internally, for vomiting, as a drink, lemon juice and potassium carbonate, while effervescing, and if any form of opium is desired paregoric is the best. Spirits of camphor, ten drops on a piece of sugar, dissolve the sugar in ten teaspoonfuls of water, and give one teaspoonful every five to fifteen minutes, followed by cuprum, veratrum and arsenicum, with hot or cold drinks, or ice as indicated; remembering at the same time, that all epidemics of cholera do not carry the same

characteristic symptoms and that cholera is liable to repeat its history.

M. Dujardin-Beaumetz says "that lactic acid, given in doses not exceeding two and one-half drachms daily, will control diarrhoea, but if given in larger doses it will produce diarrhoea." A pinch of sodium sulphate in a glass of hot water may help to control the thirst and osmotic action of the alimentary canal.

The question, whether cholera is a contagious or infectious disease, seems to be a mooted one—the terms are frequently used synonymously. Contagion may be defined to be that property or process by which diseased conditions of organized bodies are communicated to other bodies, either vegetable or animal, but in this instance to animal, and the contagism or poison is not liquid or gaseous, but solid or semi-solid.

Fevers might be called infectious; hydrophobia or syphilis might be called contagious, while cholera might be intermediate through food or drink.

A microbe may be of either vegetable or animal origin, a bacteria of vegetable origin and of the scavenger family. A bacilli is a rod-shaped bacteria, while a micro-coccus is a spherical-shaped bacteria.

Some contagia requires abrasion of surface, others through mucous surfaces, some elect different avenues. A small amount of virus is followed by increased amount in body, a fact of self-multiplication, and would show the virus to be a distinct organism in every disease.

The definite course of most contagious diseases, may be explained on the ground that the prodigious multiplication of the germs exhaust their pabulum and leads to the starvation of other bacteria, and the questions arises whether the comma-bacilli is the result or cause of the intestinal lesions.

It is not probable that any bacteria has the power to attack healthy tissue, if so, how important to preserve all tissue in a healthy condition, and when diseased to restore it to a healthy condition, rather than trying to antidote their ravages by anti-septics and other microbe destroyers. The study of Koch's comma-bacilli, or Flugge's spirillum cholera Asiaticæ, is so extensive, that it will have to be postponed until another time.

The field and study of the production of toxines, through changes in the constituents of the body by micro-organisms, will open up great problems in future researches.

**All That Is Necessary.**—The American Association for the Advancement of Science says that the following lines are all that is necessary for the physician to learn in order to prescribe in the metric system:

1,000 milligrams make one gram.

1,000 grams or cubic centimeters make one kilo or liter.

65 milligrams make one grain.

15½ grains make one gram.

21 grams make one ounce, Troy.

## THE DUPABLE CHARACTER OF THE MEDICAL PROFESSION AND THE PUBLIC AT LARGE.

BY M. O. TERRY, M. D., UTICA, N. Y.

I BELIEVE that a study of the methods resorted to by the traveling doctor for obtaining patronage, and thereby robbing the widow, the orphan, the poor and over-credulous, will not only prove profitable, but, I trust, lead to legislative enactment for the removal of these pestiferous imposters. Through wise legislation the medical man of to-day in the State of New York must not only graduate from some legally incorporated medical college, but he is required to pass an examination before one of the three State boards of medical examiners—each school of medicine having its own board—the grade of qualifications formulated by the Board of Regents of the University of the State of New York being the same for all the schools. Since the initiation of this reform there have been, and will be, efforts made to nullify the law, which came into effect on September 1, 1891. Last winter a large number of medical students from several of the best colleges of New York pooled their money and, uniting with the disappointed quacks, attempted to bribe the legislative body at Albany. The most ingenious arguments were used, and some of the members were even induced to hesitate for a time. But the majority of the legislators are to be congratulated for firmly standing by a law (needed for so many years) which had been finally enacted in 1891.

A law of equal importance should now follow it to stop the nomadic career of traveling pretenders, who are irresponsible and utterly devoid of moral principle. Since physicians, irrespective of school, have instituted and carried to a successful termination a law making it necessary that medical men should be more thoroughly equipped, ought they not to be protected in their endeavors to benefit the public?

Surgeons and physicians can not advertise the cures they naturally give themselves credit for making without being disgraced and even expelled from the medical societies to which they belong. There are imposters in all vocations. At the present time what an inducement to become a rascal in the medical profession, for the law, as it now stands, lays no restraint upon the traveling charlatan, who descends upon our city like a whirlwind, none knowing from whence he came and whither he will go, in unending pursuit of gullible humanity. Such individuals have entered the profession solely for the money they can get out of it, and would be rascals in any business in which they might engage. The most surprising fact in reference to the whole matter is that this nefarious business is facilitated and often only made possible by certificates obtained from prominent citizens in our midst.

Turn the telescope of time backward for twenty years, and the contemplation affords a sad commentary upon the average intellect of this generation. One pretender follows closely upon the heels of another. The first, perhaps, claims to have found the secret of curing all disease by a chemical method; the second will cure special cases (catarrhal for instance) so the newspapers say (and the doctor pays them well to make the statement). Let me say just here, that we can not expect the press of the present day to refrain from publishing anything as an advertisement that will inure to its pecuniary benefit. So, aided by the press and prominent individuals of the community, the shrewd imposter continues to steal the bread from the poor and needy by promises for which there is no valuable consideration returned. Having heard of the marvellous cures alleged to have been performed by these itinerant adventurers, the lame, halt and blind flock from the country expecting to be instantly healed by the magic touch of the new magician.

You will notice that the traveling doctor chooses methods of cure outside of the well beaten track of the regular profession. The use of injections for the cure of ruptures, as well as for the treatment of hemorrhoids, has been tested by the best surgeons and found to be a failure in the first instance as to the permanency of the cure, and, in the second, a dangerous procedure; but this can not be known to the non-professional public. It is novelty that attracts the credulous, and for this reason the deluded, sick public, like the drowning man catching at a straw only to be deceived and disappointed in the end, should be protected. When people can be made to realize that recommendations may be fraudulent and are often purchased, that the crutch thrown away in the public hall as an evidence of miraculous cure is simply an unprincipled fraud, that the person on whom the cure appears to have been performed was not ill, but simply a confederate of the charlatan, then possibly a few of the miserable may be induced to save their small earnings against a rainy day in the custody of a reputable savings bank.

It must be admitted that the medical profession in its ardent desire to benefit the suffering, is not entirely free from criticism in regard to its too hasty adoption of new and unknown remedies. We have only to go back as far as the Koch craze for an instance of this kind. Think of so scientific a man as Dr. Koch giving out to the world a specific in the form of a secret. Worse still, that institutions—and I need not leave Utica to find illustrations—should give up their legitimate work to practice on individuals, many of whom had simply a chronic bronchitis, or a reflex cough, using a preparation of which the physician was ignorant. This is not a criticism on any school of medicine, but a sweeping criticism on the quack-

ish methods which the medical profession have been lured into. If the profession is to give out combinations or so-called specifics without knowing the ingredients of the same, the prefix *doctor* should be dropped and the word *druggist* substituted.

The Keeley chloride of gold cure is quite in line with the above remarks. The *Druggists' Circular* gives the combination under the head of "Double Chloride of Gold," for drunkenness and the opium habit, as: "Chloride of ammonium, grain 1; aloin, grain 2; compound tincture of cinchona, ounces 3; water sufficient to make ounces 4." If this be the true combination of Dr. Keeley's prescription there does not appear to be very much gold cure to the treatment. Keeley is reaping millions out of his secret formula and new institutions are springing up. Would the State allow our insane to be treated by secret methods? No. We have most stringent laws in regard to the insane. Can any one say that the victims of the opium and alcohol habit are not as deserving of State supervision as the insane in our State hospitals? The public at large in health should free itself from its lethargic state and in the interest of humanity control all institutions and see that they are conducted in a scientific manner, instead of allowing the weak, brain-sick victims of opium and alcohol to be permitted to enter any institution where secret cures are said to be made.

Dr. L. C. Crowell, of Syracuse, N. Y., has an institution for the cure of inebriety and the opium habit, and he makes no secret of the remedies which he uses. This is the only proper way to conduct an institution of this character, for physicians should be familiar with the remedies used in cases of this sort, especially as patients are sent by them to such institutions. Dr. Crowell stated to me that he used the bi-chloride of gold injection into the arm in medicinal doses three times a day, the dose varying in accordance with the patient, as we are obliged to do in the treatment of other diseases; that the tonic features of the treatment consisted in the administration of nitrate of strychnia, cinchona and other bitter tonics, and that during the treatment the patient was allowed to take liquor, as he was wont to do before he began treatment, and to continue it until the stomach would not tolerate it, and, in fact, until it was nauseating to think of it. This is the peculiar feature of the bi-chloride of gold treatment.

Illustrating the ignorance of the average traveling doctor, we might mention the experience of a young, bright and incredulous woman physician in our city who visited one of these pretenders. Her description is as follows:

"Not wishing to condemn him unheard, and knowing I could go to him as a layman and get an opinion, I went, stating that my grandmother



had died with heart trouble, and that some palpitation recently experienced had caused me to fear that there might be an inherited tendency in that direction. After a superficial examination of the heart, the so-called physician announced that I needed treatment, that he should charge \$50 for my case (the money to be paid in advance); that there was no organic trouble there at present, it simply being *stenosis*! which would develop into organic trouble if allowed to run on without treatment."

How shall we deal with the traveling doctor? There seems to be two ways of doing it: First, in order to get at the difficulty at once, this society should instruct its censors to meet those of the Old School that they may present the matter in a representative manner to our legislative body, the substance of which shall be that any traveling doctor locating in any settlement, village, town or city, who shall advertise in an unprofessional way, stating that he can cure incurable cases by any novel or regular method, and who shall demand fees in advance, shall be obliged to give bonds to the amount of five thousand dollars, and to refund the fees he has received if no cure be performed. But this shall not exonerate the doctor from any suit for malpractice which the aggrieved party may see fit to institute. Secondly, that the legislative body at Albany be urged to pass an act which shall relieve every city, town and village in this State from these impositions.

In connection with the subject of the Keeley cure for inebriety and the opium habit I would further offer the following resolution: That all institutions in this State having for their purpose the cure of inebriety and the opium habit be obliged to register their methods of treatment, if any pretension is made to secrecy, with the proper authorities at Albany, N. Y., that such treatment may come under the inspection of the State Board of Health.

**Coincident Attacks of Distinct Fevers.**—Dr. H. N. Joint states (*Practitioner*) that while diphtheria aggravates scarlatina in the acute stage, scarlatina modifies and attenuates subsequent diphtheritic symptoms. Roetheln, after scarlatina, assumes often a malignant type. Measles is intensified after scarlatina, and so is scarlatina after measles. Erysipelas is mild when complicated by scarlatina. Vaccinia is severe in scarlatinal convalescents.

**A Uterus in a Scrotum.** A curious case of hermaphroditism was recently reported by M. Boekel to the *Academie de Medicine* (*Lancet*, April 30, 1892).—A man, twenty years of age, has had since birth an inguinal hernia, to relieve which an operation for radical cure was undertaken. The hernial sac was found empty, but in its posterior wall there was found, covered by peritonium, a triangular body, which was supposed to be an intestinal diverticulum. Further examination, however, showed that the inguinal canal was empty, and that the organ in question had no connection, whatever, with the digestive tube.

Compression of the abdomen above the ring resulted in the extrusion through the external inguinal ring of an ovoid pearly body resembling the testicle. Lying parallel and above this body, and united to it, was a fringed cystic organ, which could not be anything else but the Fallopian tube. All these structures were carefully isolated by dissection and extirpated. Cicatrization was complete at the end of ten days. Examination of the extirpated mass revealed (1) a bicornate uterus, the mucous membrane of which was lined by ciliated epithelium; (2) a Fallopian tube and a testicle provided with an epididymis and a vas deferens; (3) a broad ligament enclosing these organs. This is the only known example of female sexual organs being contained in the scrotum of a man. The patient's appearance and habits were entirely those of a male.

**Moral Effects of Transfusion.**—Dr. Peyton Turner, of Abilene, Texas, reports (*Med. World*) the case of a man who had what seemed to be pernicious anemia. Dr. Turner tried transfusion from the arm of a friend. He got well. The patient had been extremely wicked and bore a villainous reputation, while his friend was extremely pious. The dispositions of the men were as unlike as possible. The wicked man lost all desire for sin and forsook his evil ways, while his friend remained unchanged morally.

**Dover's Powder in the Treatment of Colliquative Sweating.**—Dr. G. Frank Lydston, of Chicago, stated in a recent clinical lecture that, while an interne in the New York Charity Hospital, he experimented quite extensively upon the abundant clinical material in the medical wards to determine the relative value of the various remedies recommended for night sweats, particularly in pulmonary consumption. He found atropine not only unreliable, but productive of certain disagreeable effects that more than counterbalanced its possible advantages. The mineral acids and other tonic remedies and astringent baths were not much more efficacious than the atropine. He established, to his own satisfaction, that there are but two remedies which can be relied upon to check night sweats. These are Dover's powders and the active principle of *cocculus indicus* or *picrotoxin*, the former being by far the more valuable of the two.

**The Remedial Use of Apples.**—Chemically the apple is composed of vegetable fibre, albumin, sugar, gum chlorophyll, malic acid, gallic acid, lime and much water. Furthermore, the German analysts say that the apple contains a larger percentage of phosphorus than any other fruit or vegetable. The phosphorus is admirably adapted for renewing the essential nervous matter, lecithin of the brain and spinal cord. It is, perhaps, for the same reason, rudely understood, that old Scandinavian traditions represent the apple as the food of the gods, who, when they felt themselves to be growing feeble and infirm, resorted to this fruit, renewing their powers of mind and body. Also, the acids of the apple are of singular use for men of sedentary habits, whose livers are sluggish in action, those acids serving to eliminate from the body noxious matters, which, if retained, would make the brain heavy and dull, or bring about jaundice or skin eruptions and other allied troubles. Some such experience must have led to our custom of taking apple-sauce with roast pork, rich goose and like dishes. The malic acid of ripe apples, either raw or cooked, will neutralize any excess of chalky matter engendered by eating too much meat. It is also the fact that such rich fruits as the apple, the pear and the plum, when taken ripe and without sugar, diminish acidity in the stomach, rather than provoke it. Their vegetable sauces and juices are converted into alkaline carbonates, which tend to counteract acidity.—*North American Practitioner*.

# The New York Medical Times.

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## IS IT ISOPATHY, OR WHAT IS IT?

NO one will question the fact that to the fertile mind and brilliant researches of Pasteur, we owe the modern system of bacteriology which is unlocking the door to so much that was mysterious in disease, and bearing rich fruit in suggesting in many cases an appropriate remedy. The investigations of Pasteur in fermentation was undoubtedly the stepping-stone to his discovery of the bacteria of splenic fever or *charbon*. The brilliant results growing out of this discovery and the administration of the attenuated virus in *charbon* and still more startling in *hydrophobia* to cure the disease, are familiar to all. Startling as are the effects of the attenuated virus of *hydrophobia* in curing the victim of the bite of the rabid animal, the same principle is quite as strongly illustrated in tetanus or lock-jaw, which is considered equally terrible and equally fatal, statistics showing a fatal termination in most acute suffering in ninety cases out of a hundred. Dr. Jones, in the *Fortnightly Review*, gives a graphic description of the treatment of this disease with success upon the principle marked out by Pasteur.

In 1884 a young German doctor, Nicolan, found that the introduction of a small portion of earth of streets and fields under the skin of mice, gave rise to symptoms exactly resembling tetanus in man. The pus or matter found in the wound reproduced the symptoms in animals inoculated with it, and, further, that it contained almost always a drum-stick-shaped bacillus which he regarded as the possible cause of the disease. A young Japan-

ese physician in Koch's laboratory and two Italians succeeded almost simultaneously in obtaining pure cultures, and found that an infinitely small drop of the culture introduced under the skin of animals induced tetanic symptoms, ending in death. The poison was found secreted by the bacilli and separable from them by appropriate means. The drum-stick bacillus was next subjected to experiment, and in 1890 Kitasko and Dr. Behring discovered that by treating rabbits with tri-chloride of gold they can be made proof against tetanus, so that the inoculation of twenty times the amount of virus sufficient to kill an ordinary rabbit is without injurious effect.

They further showed that the blood of an animal thus treated has the power of neutralizing the virus to such a degree that thirty drops injected into another rabbit suffice to render it immune. Soon after the publication of these experiments, the two Italian co-workers succeeded in extracting from the blood of dogs thus rendered immune—a substance of the nature of albumen that had the property of destroying the tetanus virus, within or without the body, and with which animals far advanced in tetanus could be cured. From the nature of its properties they named it *tetanus antitoxin*. After some attempts they succeeded in getting it as a white crystalline powder, which retains its remedial power for many months. Up to the present time about a dozen cases have been successfully treated, enough in the light of results along the same line in other diseases to show the correctness of the principle and to establish the fact that in this terrible disease as well as in *hydrophobia*, a remedy has been discovered at last which takes them out of the class of incurables.

We know so little about the action of poisons, so little as to how remedial agents produce results, that we must call to our aid the analytical powers of the metaphysician to determine whether in the cases above cited the action is homœopathic, isopathic or neither. Whatever may be the principle and how much it can be utilized in new discoveries remains to be seen. Pasteur very justly says: "One can do nothing without preconceived ideas; but we must have the wisdom to believe in their deductions only so far as experience confirms them. Preconceived ideas, under the rigid control of experimentation, are the vivifying flame of the science of observation; there is no fixed ideas. The greatest disordering of the mind is to believe things are because one wishes them to be. To enter upon a path and to stop every moment and make sure you are not going astray—that is the true method."

## NATIONAL QUARANTINE.

THE National Quarantine bill passed by the Senate, January 31st, is of so much importance that we give the leading provisions of the new law in full for the more easy reference of our readers in the future. It will be seen that the power to regulate quarantine is given to the National Government, and that the States are forced to co-operate; failing to do so, the President can step in with full power to stop immigration when necessary. The provisions of the law are so wise and so well calculated to meet every condition which may arise in the protection of our country from the introduction of pestilential disease from foreign countries that they commend themselves to general approval and efficient co-operation:

"The President, in his discretion, is authorized to detail any medical officer of the Government to serve in the office of the consul at any foreign port for the purpose of furnishing information and making the inspection and giving bills of health. Any vessel clearing and sailing from any such port without such bill of health, and entering any port of the United States, shall forfeit to the United States not more than \$5,000, the amount to be determined by the court, which shall be a lien on the same, to be recovered by proceedings in the proper district court of the United States.

"SECTION 3. That the supervising Surgeons-General of the Marine Hospital Service shall, immediately after this act takes effect, examine the quarantine regulations of all State and municipal boards of health, and shall, under the direction of the Secretary of the Treasury, co-operate with and aid State and municipal boards of health in the execution and enforcement of the rules and regulations of such boards, and in the execution and enforcement of the rules and regulations made by the Secretary of the Treasury to prevent the introduction of contagious or infectious diseases into the United States from foreign countries, and into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia.

"And all the rules and regulations made by the Secretary of the Treasury shall operate uniformly, and in no manner discriminate against any port or place; and at such ports and places within the United States as have no quarantine regulations under State or municipal authority, where such regulations are, in the opinion of the Secretary of the Treasury, necessary to prevent the introduction of contagious or infectious diseases \* \* \* and at such ports and places within the United States where quarantine regulations exist under the authority of the State or municipality

which, in the opinion of the Secretary of the Treasury, are not sufficient to prevent the introduction of such diseases into the United States \* \* \* the Secretary of the Treasury shall, if in his judgment it is necessary and proper, make such additional rules and regulations as are necessary to prevent the introduction of such diseases into the United States from foreign countries.

"And when said rules and regulations have been made they shall be promulgated by the Secretary of the Treasury and enforced by the sanitary authorities of the State and municipalities, where the State or municipal health authorities will undertake to execute and enforce them; but if the State or municipal authorities shall fail or refuse to enforce said rules and regulations, the President shall execute and enforce the same and adopt such measures as in his judgment shall be necessary to prevent the introduction or spread of such diseases, and may detail or appoint officers for that purpose.

"The Secretary of the Treasury shall make such rules and regulations as are necessary to be observed by vessels at the port of departure and on the voyage, where such vessels sail from any foreign port or place to any port or place in the United States, to secure the best sanitary condition of such vessel, her cargo, passengers and crew; which shall be published and communicated to and enforced by the consular officers of the United States.

"None of the penalties herein imposed shall attach to any vessel or owner or officer thereof until a copy of this act, with the rules and regulations made in pursuance thereof, has been posted up in the office of the Consul or other consular officer of the United States for ten days, in the port from which said vessel sailed; and the certificate of such Consul or consular officer, over his official signature, shall be competent evidence of such posting in any port of the United States.

"SEC. 6. That on the arrival of an infected vessel at any port not provided with proper facilities for treatment of the same, the Secretary of the Treasury may remand said vessel, at its own expense, to the nearest national or other quarantine station; \* \* \* and after treatment of any infected vessel at a national quarantine station, and after certificate shall have been given by the United States quarantine officer at said station that the vessel, cargo and passengers are each and all free from infectious disease, or danger of conveying the same, said vessel shall be admitted to entry to any port of the United States named within the certificate. But at any ports where sufficient quarantine provision has been made by State or local authorities the Secretary of the Treasury may direct vessels bound for said ports to undergo quarantine at said State or local station.



"SEC. 7. That whenever it shall be shown to the satisfaction of the President that by reason of the existence of cholera or other infectious or contagious diseases in a foreign country there is serious danger of the introduction of the same into the United States, and that notwithstanding the quarantine defense this danger is so increased by the introduction of persons or property from such country that a suspension of the right to introduce the same is demanded in the interest of the public health, the President shall have power to prohibit, in whole or in part, the introduction of persons and property from such countries or places as he shall designate and for such period of time as he may deem necessary.

"SEC. 8. That whenever the proper authorities of a State shall surrender to the United States the use of the buildings and disinfecting apparatus at a State quarantine station, the Secretary of the Treasury shall be authorized to receive them and to pay a reasonable compensation to the State for their use, if, in his opinion, they are necessary to the United States."

#### THE PHYSIOLOGICAL AND THERAPUTICAL EFFECT OF ANIMAL EXTRACTS.

AN EDITORIAL in No. 13 of the *Bactereological World*, quotes largely from numerous investigators in France, Russia, Germany and other countries, of the claims made by Dr. Brown-Sequard, of the stimulating, tonic and restorative properties of testicular juice. It is said that nearly 1,500 physicians in France alone are now using the fluid in hypodermic injections in their practice and closely watching the results. Among the number are included Dr. Dupony, editor of the *Moniteur d'Hygiene Publique*, and many of the most prominent men in our profession in Paris. In 1869 Dr. Brown-Sequard stated in a letter that all the glands gave to the blood useful principles, and that the morbid manifestations that depend in man on the internal secretion of organs should be met in treatment by injections of liquids of the organs taken from an animal in good health. In the direct line of this idea comes the use of the juice of the thyroid gland in myxedema, which is being used in England with marked success, of the gray matter of the brain to give vitality and strength to diseased or worn out constitutions and the supra-renal capsule in all asthenic diseases.

Dr. Wm. A. Hammond, in a lecture recently delivered before the Post-Graduate School of this city, of which he was one of the founders, details what he considers an improved method of obtaining the testicular juice, fully indorsing Dr. Brown-Sequard's estimate of its value, and adds to the

list as the result of his own investigations extracts from the heart, the brain, the stomach, and the testicles, each having specific action upon the several organs. In the preparation of these extracts the very careful manipulation which is given render it only possible for them to be obtained in reliable purity and strength by the skilled expert, when Dr. Hammond claims they can be kept for a considerable length of time. Dr. Hammond advances some interesting facts in reference to the action of the gastric juice upon food and poisons and his own theory as to the specific action of the animal extracts. He says:

"It has recently been alleged by some medical authorities, that there is no difference in the physiological or therapeutical action of medicines, whether they be introduced directly into the blood by hypodermic injections or taken into the stomach, but it is scarcely worth while to seriously combat this assertion. For while it may be true that some substances are not altered by the gastric juice before they are absorbed into the system, it certainly is not true of many others, and it surely is erroneous as regards those of animal origin. Indeed it is, I think, doubtful if anything capable of being acted upon by the gastric juice and of being absorbed into the blood, gets into the system in exactly the same form in which it got into the stomach. And I am very sure that all organic matters, without exception, undergo radical changes under the action of the gastric juice, in some cases amounting to decomposition and recomposition.

"It is well known that Woorara, the virulent arrow poison used by Indians of South America, and which is invariably fatal to animal life when injected into the blood, is innocuous when taken into the stomach, even in very large quantity. I have ascertained, by actual experiment, that the poison of the rattlesnake may be swallowed with impunity. During the course of my medical service in the army on the Western plains, I have collected a large quantity of rattlesnake poison. A small fraction of a grain of this injected hypodermically was sufficient to kill a dog in a few minutes, while previously the same animal had been made to swallow half a drachm without the production of any apparent result. Experiments made with the saliva of hydrophobic animals prove that it is rendered harmless by the action of the gastric juice. The vaccine virus may certainly be swallowed with impunity, as has been shown by repeated experiments upon animals.

"Relative to the animal extracts to which I am now referring, I have ascertained beyond ques-

tion that if they are inclosed in capsules so as to reach the stomach without coming in contact with the mucous membrane of the mouth, they are absolutely without physiological or therapeutic effect so far as can be perceived, even when given in quantities of a teaspoonful or more, but if dropped upon the tongue in double the quantity used for hypodermic injection and allowed to remain in the mouth without being swallowed—thus avoiding the action of the gastric juice—they are absorbed and exert a slow but still decided effect, though nothing comparable to that produced when they are administered hypodermically.

"Organic beings possess the power of assimilating from the nutritious matters they absorb the peculiar pabulum which each organ of the body demands for its development and sustenance. The brain, for instance, selects that part which it requires; the heart the material necessary for its growth and preservation, and so on with the liver, the lungs, the muscles and the various other organs of the body. No mistake is ever committed; the brain never takes liver nutriment nor the liver brain nutriment; but each selects that which it requires. There are, however, diseased conditions of the various organs in which this power is lost or impaired, and as a consequence disturbance of function, or even death itself, is the result.

"Now, if we can obtain the peculiar matter that an organ of the body requires, and inject it directly into the blood, we do away with the performance of many vital processes which are accomplished only by the expenditure of a large amount of vital force.

"Let us suppose a person suffering from an exhausted brain, the result of excessive brainwork. Three hearty meals are eaten every day; but no matter how judiciously the food may be arranged the condition continues. Now, if we inject into that person's blood a concentrated extract of the brain of a healthy animal we supply at once the pabulum which the organ requires. Then, if under this treatment the morbid symptoms disappear, we are justified in concluding that we have successfully aided Nature in doing that which, unassisted, she could not accomplish.

"All this is applicable not only to the brain, but certainly to the heart, the generative system, the spinal cord and, I believe, other organs of the body. I have repeatedly seen a feeble heart rendered strong, the blood corpuscles increased in number and the color of the blood deepened by the use of cardine, and I have many times

seen an exhausted sexual system restored to its normal power by the use of testine, cerebrine and medulline."

#### THE CITY OF MEXICO.

THE annual meeting of the American Health Association, recently held in the City of Mexico, was one of the most interesting, enjoyable and instructive ever held by that association. Our extracts from two of the leading papers read at the meeting give some very interesting facts respecting the climate of some portions of our sister republic, especially the Valley of Mexico, in which the capital is located. With the drainage of the valley, which will be secured when the tunnel through the mountain is completed, the City of Mexico will become a favorite winter resort for our Northern people seeking health and pleasure. Dr. Antonio J. Carbajal, in a paper on the "Influence of Climate on the Progress and Severity of Pulmonary Tuberculosis in Mexico," said:

"There are localities in which pulmonary phthisis is unknown; there are others which do not present an absolute immunity to their inhabitants, but phthisis rarely shows itself; there are localities where the disease shows itself in the natives, but the climate is magnificent for invalids who have lived in other climates.

"Recent statistics in the State of Zacatecas, which has a population of 476,761, show a mortality of tubercular diseases of only 0.92 per cent., and from pulmonary tuberculosis 0.37 per cent. In Tenango, in the State of Mexico, there has not been a single case of phthisis noticed during a period of twelve years. In the State of Oaxaca the mortality from all tubercular diseases was 2.08 per cent., while as an instance of the third class," he stated "that in the City of Mexico the mortality from all tubercular affections was 8.17 per cent., and from phthisis pulmonalis was 6.55 per cent., while in the villages, located principally in the Federal District, the mortality did not exceed two per cent., often falling as low as one per cent."

He quoted the following conclusions of Dr. Juan Brena, who has made a study of the medical climatology of Zacatecas: "(1) Phthisis is excessively rare in persons who have lived always or for many years in Zacatecas. (2) Cases of cure have been effected in the first and second stages of the disease. (3) The facts mentioned are probably due to the elevation above the level of the sea, the dryness of the atmosphere, the special manner of living of most of the inhabi-

tants and the non-crowding of persons in small lodgings. (4) Zacatecas is very beneficial to consumptive persons, principally in the first stage of the illness, and in its localized and accidental forms. (5) When suppuration of the pulmonary deposits has commenced there is less probability of deriving enough benefit from the climate to compensate the patient for trouble and pain of changing his residence. The success will depend on the amount of individual resistance and the magnitude of the wound. (6) If the softening is multiple or excessive, it is useless to move the patient. (7) The same ought to be said in the case of galloping consumption, or generalized phthisis, and of that which attacks old age."

In a paper on the climate of the City of Mexico, Dr. Domengo Orvaranas, member of the Supreme Board of Health, said:

"The mean temperature," he said, "of Mexico is 15.05 centigrade. The difference between the absolute maximum and minimum, in the shade, reaches up to 25° C. in the course of a month, and the difference between these same maximum and minimum in the sun has reached as high as 53.9 C. The hottest month is April and coolest is January. The mean annual rainfall is 24.18, in rainy days averaging 139 in number per year, and generally occur from June to October (rainy season). Dew falls in abundance; fogs seldom; snowstorms—we only see one in about forty years, though on the summits of Popocatepetl and Ixtacihuatl, which are not far distant, can be seen perpetual snow the year round. Frosts are frequent.

"The geographical situation of the City of Mexico and its great altitude are the cause of the extraordinary intensity of light in its atmosphere. The rarefaction of the atmosphere and the water vapors, as we have above shown, being very scarce, the solar rays exercise on the ground their full luminous, calorific and chemical powers unimpeded by any disturbing influence. The interesting observations carried out by Downs & Blunt on the effect of light on bacteria and other organisms, which were perfectly developed, as well as on the protoplasm, has brought to our knowledge some interesting facts with regard to this question. By exposing to light the Pasteur solution, urin and the infusion of hay, and afterwards depriving them of light, we find that this agent is not favorable to the development of bacteria and of microscopic spores which are produced during putrefaction. It has also been noted that the direct rays of the sun act in a more powerful manner than when they are diffused, and that the germs already developed can be destroyed by the sole influence of solar light. Doubt-

less it is to this benevolent influence that we owe our almost total exemption from tuberculosis, and the fact that when found amongst us it takes such a very mild form; also the fact that the greater part of the infectious diseases are either rare amongst us or entirely unknown."

The Mexican National Meteorological Observatory, in its report for January, 1893, gives the mean temperature for the month as 52.09 F. The highest point registered in the shade was 71.08 F. On the 4th, 6th, 7th, 9th, 13th and 16th the temperature fell to the freezing point at night. Rain fell but two days during January, and the total rainfall was but 9-100 of an inch.

#### STATE SOCIETIES.

THE New York State societies all held their annual meetings at Albany early in the month of February. The emphatic recommendation of Dr. Pilcher, president of the New York State Medical Society, in his annual address, to abolish the present *Code of Ethics*, was materialized in the report of the Committee on the President's Address, of which Dr. Vanderveer was chairman, in a resolution to abolish its present *Code of Ethics*, which passed the society by an almost unanimous vote. The New York State Medical Society has now *no Code of Ethics*, and has thus placed itself in advance, so far as the recognition of medical liberty is concerned, of the other State societies in accepting the cultured physician not as the exponent of a sect, but as a brother worker in the ranks of a great profession in which each one is using his best efforts for the relief of human suffering.

In the New York State Homœopathic Medical Society Dr. Fiske recommended a homœopathic Commission of Insanity in addition to the present commission, and increased facilities for the treatment in insane hospitals of patients wishing homœopathic treatment. A large portion of the address was devoted to the continuation of the discussion of the subject which formed the basis of his semi-annual address, viz., "The revision of the marriage laws." The society concurred in the resolution of the Old School society that the regents be requested to require that the student before he receives his license shall have been present at three cases of obstetrics. A committee was appointed to report on capital punishment.

Dr. Gorham read a most interesting and original paper on "Spondylitis"—Pott's disease—in which he showed marked originality in the apparatus used in the treatment. The society



voted to have one thousand copies struck off for distribution. In the bureau of gynecology Dr. Lee gave three cases of extra uterine pregnancy of interest. Dr. Terry took charge of the bureau of surgery in the absence of the chairman. Cases of appendicitis were reported by Dr. Mosely, of Buffalo, in which he advised early operation, and this seemed to be the opinion of most of the surgeons, except Dr. Terry, who then threw a fire brand into the bureau by stating that the necessary delay of twenty-four hours in the early stages of a case of appendicitis could be utilized for such internal medication as would obviate the necessity for any surgical procedure. He asked not for delay, but for this treatment during the *first stage*. Dr. Sheldon, of Syracuse, reported a case seen too late for the operative treatment, yet where the oil treatment of Dr. Terry had succeeded. Dr. Candee had seen an article on the subject in the *Orificial Journal*, by Dr. Terry, and had had communicated its substance to his partner.

An ex-president of the society, and for many years one of its most conscientious and intelligent members, writes us in regard to the committees, "That the New York and Brooklyn societies are evidently of the opinion that they should have representation on committees in accordance with their numbers. Now, this is entirely erroneous. In the Senate of the United States the State of Rhode Island has the same representation as New York, and this part of the Constitution can not be changed without the consent of the State in question. So it should be in the State society. On committees and in all important work every section of the State should be represented, as a conclusive evidence that no clique or clan is running the organization. The nominating committee for the State Board of Medical Examiners is not so adjusted. *But it should be*, and the board should be selected from men outside of the colleges and from different parts of the State."

Dr. H. M. Paine, chairman of the committee on legislation, presented the report of his committee advocating the passage of a bill for the creation of a State Homœopathic Commission in Lunacy. The rest of the session was devoted mostly to routine work. Dr. John M. Lee, of Rochester, was elected president for the ensuing year. The semi-annual meeting of the society will be held at Middletown.

AT a recent meeting of the Practitioner's Society, it was the consensus of opinion among the many able and experienced men who took part in the discussion, that the old practice of an

exclusive milk diet in typhoid fever was a mistake and led to much harm by prolonging the fever. It was shown that there was no danger of solid food if properly prepared irritating the typhoid lesions at the ilium, as it was no longer solid when it left the stomach. Milk was apt to ferment, causing pain and increase of temperature. The food suggested as a substitute for milk was stale bread, scraped meat, baked potatoes, bouillon, fermented milk, beaten egg, wine jelly and juices. The skilled physician will individualize the food as well as the medicine.

THE Sloan Maternity reports six deaths in its first one thousand consecutive cases of labor. An analysis of these cases showed that in one instance death was due to chronic organic disease and not to labor; in another the patient was moribund when taken from the ambulance; in the third—a case of placenta previa—the fatal termination was owing to delay in procuring medical assistance, the woman having nearly bled to death before coming to the hospital. There was one death from puerperal septicæmia; the patient being in a septic condition when admitted.

FORTY thousand patients visit Carlsbad annually in search of health and almost always return benefited. And yet the waters are no better than are found at some of the famous springs in this country where no such benefits are obtained. The simple reason is that Carlsbad is a health resort, and every mouthful of food and every hour's work is carefully prescribed. The water, the exercise and the food are all taken in the form of a prescription after a careful medical examination. A failure to carry out the instructions of the physician to the letter and the patient is informed his presence is no longer desired. Similar care at our own watering places would be followed by like beneficial results.

GASTRODIAPHANY.—Every one who has used the little electric lamp in the mouth for diagnosis or treatment, has been struck with the clearness with which the outlines of all the organs are brought out through the illuminated skin. By this illumination we can detect, through defects in the transmission of light at certain points, lesions almost impossible to discover by the eye alone. This principle is not applied in illuminating the stomach as a means of diagnosis. The instrument consists of an Edison lamp, of four candle illuminating power, attached to an elastic esophagean probang, which is introduced into the stomach in the same way as the tube for washing

it out. The skin is so illuminated that, on looking on the outside, you see the point at which the lamp is shining inside, and also the outline of the stomach in the form of an oval line, bright red on a base of a deep gray red. By placing the lamp in different positions you can inspect every part of it, detecting enlargement, abnormal growth, local trouble and tissue changes. Similar researches have been made through the urethra in the bladder, and stone and tumor detected and their size measured with tolerable accuracy.

AT THE meeting of the American Medical Association in June last, the action of phenacetine in pneumonia was discussed at length. The conclusion was that phenacetine was not objectionable as an antipyretic, as it does not affect the heart unfavorably, a conclusion which has been fully verified in our own practice. Of all the new class of antipyretics, phenacetine is undoubtedly the safest and best.

IN the friendly settlement of the difficulties in the Brooklyn Homœopathic Hospital, the trustees say "an act of justice has been done to Dr. Lewis and Miss Betts, both of whom, in common with all the members of the staff, have always enjoyed and still enjoy the confidence and respect of the trustees, and whose good name, by the voluntary action of the staff, fully vindicated." The whole trouble arose from malicious gossip to which even an angel in our profession would be liable, and which ought at the commencement to have been treated with the contempt it merited.

WHY IS IT that the ratio of insanity in all civilized countries, notwithstanding the increased asylum accommodations and the vastly improved treatment, is steadily increasing, having gone up in England since 1862 from 1.81 to 3.11, and even more than that in this country. Will statesmen and philanthropists turn for a time from the well-beaten road of ordinary political measures and charities, to point out a remedy and dam at the source this ever broadening and deepening stream, whose tributaries are in almost every town and hamlet in the land. The causes are so many and so varied, from heredity down the long line of worries, of alcoholic and narcotic poisoning, that the wisest statesmanship and the most profound study of psychology and mental science must be brought into action to meet intelligibly abuses and habits so closely entwined with almost every phase of social and industrial life. As there can be no one specific, the remedy must be general, gradual and constant.

It has been well said that the manifestations of insanity are nothing further than distorted or diseased manifestations of mental activities, which by themselves are present in every man. These mental activities, the outgrowth of physiological conditions, to a certain extent hereditary, are increased or distorted by different influences. An influence which to one would be comparatively harmless to another would be productive of disastrous results. The education of the will and the training of the intellect and sentiment are the main factors in building up a harmonious and healthy physical and mental organization, and through these channels must come these healing influences which will calm the turbulent passions which bring those influences which excite unhealthy mental activities under the control of reason.

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**DISEASES OF CHILDREN.** By Henry Ashby, M. D., Lond. F. R. C. P., and G. A. Wright, B. A., M. B., Oxon., F. R. C. S., Eng. Second edition, edited for American Students by Wm. Perry Northrop, A. M., M. D., Pathologist to the N. Y. Foundling Hospital, etc., etc. New York and London: Longmans, Green & Co., 1893.

The basis of the work is the experience of the authors, extending over nearly ten years in the General Hospital for Sick Children's Home, Manchester, an institution in which 1,200 in-patients and over 10,000 out-patients are treated annually. The work is written conjointly by a physician and surgeon. The American editor, Dr. Northrop, whose high rank as a specialist in children's diseases is acknowledged by all in our profession, has embodied in an appendix such new facts as has come under his notice in his large experience and such difference in theory and treatment as will bring the book into close relationship with present American practice, which adds materially to its value. A more intimate acquaintance with the therapeutics of the New School would have enabled Dr. Ashby to very essentially increase the interest and value of that part of the work relating to the treatment of disease.

**HANDBOOK OF INSANITY.** By Dr. Theodore Kirchoff. Illustrated with eleven plates. William Wood & Co., 1893.

A very excellent hand-book, in which is given in a condensed form but clearly: 1st. The anatomical basis and the location of mental disturbance. 2d. Classification, importance and mode of action of the cause of insanity. Then follow signs, course diagnosis, and treatment of mental disorders. Under a special head is given a classification of insanity, simple mental disorders, and mental troubles, associated with anatomical change in the brain with general diseases.

The F. A. Davis Co. have changed the name of the *Satellite* to that of the *Universal Medical Journal*. The new journal is larger, but the general plan is the same.

**Iodide of Strontium.**—The *Tribune Medicale* says this salt by its favorable and rapid action in morbid cardiac and cardio-pulmonary troubles is preferable to the iodide of potassium used in the same dose, and is followed by no aggravations. The indications for its use are the same as that of iodide of potassium.

## CORRESPONDENCE.

## ON THE CARE OF THE HANDS.

In these days of anti-septic surgery, as one of the many items which constitute the grand total, what is of more importance—as to soundness and cleanliness—than the condition of the physician's hands, as necessary for the protection of himself as it is for the patient?

When a certain eminent German surgeon asked the English surgeon, Tate, to what he chiefly attributed his remarkable success, Mr. Tate replied: "To the fact that I have learned to keep my hands and nails clean." Cleanliness has become not alone a science, but one of the most fundamental of the sciences, and in its broadest phrase—from a medical standpoint—closely joined to as full a knowledge of etiology as we at present possess.

I wish to offer some suggestions upon the care of the hands, and to point to some simple facts that seem to be too generally ignored.

Soap and civilization are said to be co-extensive, and each has its compensations and its disadvantages.

The necessity for a frequent use of soap removes nature's protective cutaneous oil, and hence the cuticle becomes too dry, brittle and chapped. The problem seems to be to restore this naturally soft, pliant and oily condition of the skin.

Some, either by the natural constitution—as shown by the hair as well as by the skin—or by virtue of their occupation (*e. g.*, butchers, chandlers, etc.), seem exempt from a liability to a rough, dry and chapped condition of the hands. Having experimented in the past thirty years with various methods, I would submit the following treatment as the most satisfactory:

1. If the epidermis be of unequal thickness and rough, it may be rubbed thoroughly with wet corn-meal, or fine sandpaper. It will not usually be necessary to repeat this part of the treatment.
2. If the nails are brittle, use potable waters which contain the necessary mineral constituents, which are absent from pure rain-water. These constituents may also be supplied to the system, though not so well, by certain tissue-remedies, according to the indication of each case.
3. Protection of the hands by suitable covering.
4. Restore to the skin the natural oil which has been more or less removed by the use of soap, and this is best done after thoroughly washing and drying, by the application of a little nice soap-lather mixed with a few drops of glycerine, as a permanent dressing, and well rubbed in. This process it may be necessary to repeat, especially in very cold weather, every day, and when convenient, the best time to make the application is at bed time.

Leavenworth, Kan.,

W. F. MORGAN, M.D.

## SOCIETY. REPORTS.

## THE MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.\*

Dr. Simon Baruch read a paper entitled "Practical Data on the Application of Water in Some Intractable Diseases."

He stated that the chief, though not the only aim of hydrotherapy, is to stimulate or give tone to the nerve centers. The main question is: Does the application of water to the cutaneous surface stimulate the nerve centers? The answer may be daily observed in the effect of a dash of cold water in reviving a case of syncope. Here we

\*Stated meeting, Monday, January 23, 1906. Dr. Charles Carroll Lee, President, in the chair.

have a brief shock to the sensory peripheral nerves followed by reaction, the effect of which is transmitted to the central nervous system, in consequence of which the respiration is deepened and the circulation is strengthened, as manifested in the restoration of the failing pulse. In the external use of water we have a therapeutic agent so flexible that it may be adapted to the most varying types and forms of disease. The following brief outlines of cases were presented by him in order to afford a view of the practical application of hydrotherapy in some intractable, chronic diseases, to demonstrate its flexibility and to point out the methods of adapting it to varying conditions.

**Intense Chlorosis.**—Miss H—, twenty years old, had been ill for two years, having been under constant treatment by numerous gynecologists. She was finally referred to me by Dr. T. G. Thomas for hydropathic treatment, with a diagnosis of chlorosis of aggravated type. All sorts of measures had been tried in vain. Although the patient was plump, a more pallid creature could not be imagined. The appetite was poor, the bowels irregular, sleep was disturbed, and the woman was subject to frequent (hysterical) fainting spells. The slightest exertion induced difficulty of breathing and rapidity of heart action. The menstrual flow was regular, but scanty and pale. The blood hemoglobin was estimated as thirty-one per cent.

Preparatory treatment was instituted with hot-air baths, and douches to educate the reactive capacity. As the patient fainted on several occasions a milder course was pursued. She was gently wrapped in a long-haired woolen blanket for forty-five minutes, and all parts of the body were successively uncovered and splashed with water at a temperature of sixty degrees, thrown with some force from the hollow of the hand of the attendant, followed by friction. Later she was again placed in a hot-air bath (167 degrees), with a cold compress around the head, and given frequent sips of ice-water. The head not being subjected to the heat, the patient was able to breathe the cool air of the room. When the cutaneous vessels became turgid she was placed in a tub containing eighteen inches of water, at a temperature of one hundred degrees, and thoroughly rubbed for three minutes. This was followed by an ablution with water at a temperature of sixty degrees, thorough friction, drying and general massage for fifteen minutes. She fainted twice during these procedures.

This treatment was continued, the temperature of the water being reduced one degree daily, until finally she was given a hot-air bath (175 degrees), followed by a rain-bath for thirty seconds (at ninety-four degrees, and reduced to sixty-nine degrees), then a spray douche for ten seconds (seventy-nine to fifty-four degrees) and general massage.

This treatment continued daily until she took a jet douche at forty-five degrees without flinching.

The result was that the woman became quite well. The appetite was greatly improved and the hemoglobin ascended to one hundred per cent.

This case illustrates: 1st, The effect of the douche in improving the nutrition; 2d, that hematosis may be enhanced by the stimulus conveyed from the periphery to the nerve centers and thus reflected upon the blood-making functions (as has been well shown by Winternitz, Thernes and others); 3d, that the most feebly reacting patient may by perseverance and proper adaptation of the hydropathic procedure become accustomed to this treatment. The danger of shock from cold water is by this case proved to be chimerical.

If this fragile and sensitive young woman could become accustomed to the douche by beginning with mild procedures, no chronic case that is not in extremis could fail to respond to it.

**Nervous Dyspepsia.—Anemia.**—Mrs. O—, twenty-eight years old, a resident of Florida, consulted me for agonizing pains after meals. She had been living on mush and



milk, and had had medical treatment for several years, with diminution, but not disappearance, of the pains.

She was emaciated; her voice was feeble; she was depressed and hopeless. Her wan face and prematurely old appearance bore evidence of a life of constant physical suffering. There was no hysteric element in this case. By lavage, a diagnosis of a gastric neurosis was made and a mixed diet was ordered, together with daily hydropathic treatment. A hot-air bath at a temperature of 100 degrees for six minutes filled the cutaneous vessels of the pallid skin and induced free perspiration. This was followed by a tub bath with water at ninety-eight degrees for five minutes, and a rain bath at a temperature of ninety-five degrees, reduced to ninety degrees, for one-half minute, at twenty pounds pressure, for the purpose of increasing cutaneous action. The spray douche at ninety degrees, for five seconds, with friction, closed the first treatment and resulted in good reaction.

On the following day she remained in a hot-air bath at 164 degrees only long enough to render the cutaneous vessels turgid, to promote reaction from the rain bath, for thirty seconds, at ninety degrees, reduced to eighty degrees, and a spray douche at seventy degrees. The reaction was very fair. Several days later the temperature of the rain bath was reduced to seventy-five degrees and a jet douche at sixty-five degrees was added. The reaction continued good.

In the course of three weeks the temperature of the rain bath was reduced to seventy degrees; that of the jet douche was lowered daily one degree until it reached forty-eight degrees. The patient steadily improved in flesh and spirits, and remained free from pain until the addition of cauliflower to her diet brought back the pains. The stomach was again washed out and some mucus was found in it. The patient progressively improved, and several months later she had gained fifteen pounds in weight and was much stronger.

**Diabetes and Obesity. Failure of Diet. Success of Hydrotherapy.**—Mrs. B., sixty-three years old, had for several months been suffering from lassitude, loss of appetite, depression of spirits. A year previously she had had muscular rheumatism, of which she had been relieved by wet packs and massage.

Examination of the urine by the fermentation test revealed the presence of six per cent. of sugar. The specific gravity was 1040. Eighty-one ounces were passed in twenty-four hours. The woman weighed 253½ pounds, and was languid and indisposed to exercise. An anti-diabetic diet was ordered, together with systematic walking exercise. The former was rigidly adhered to for four weeks without effect; the latter could not be accomplished because walking two blocks "put her out of breath" and exhausted her. It was determined to reduce her weight and invigorate the nervous system by giving once a week a carefully regulated hot-air bath, continued until free perspiration ensued, followed by the spray douche at ninety degrees for half a minute, and at eighty degrees for ten seconds. This was succeeded by active massage. Five times a week she received a tonic hydropathic procedure, beginning with the dry pack for half an hour, to fill the cutaneous vessels, followed by a general ablution at seventy degrees and good friction.

In the course of seven weeks the specific gravity of the urine became 1035, the proportion of sugar five and one-quarter per cent. Wet packs were now employed for forty-five minutes, by means of a sheet wrung out of water at fifty degrees, followed by a half bath for ten minutes at eighty-five degrees; a sponge ablution on the back at seventy degrees, with active friction in tub, and massage for fifteen minutes. The object of this treatment was to increase tissue-change and improve the circulation in the muscular tissues, where sugar is disposed of. This was continued for seven weeks, the jet douche

at seventy-five degrees being added as a tonic and for the purpose of stimulating muscular contraction. The result of these procedures was seen in an ability to walk more every day, until finally the patient could cover four miles a day without fatigue. Later the sugar disappeared from the urine, and has remained absent.

In a second case of diabetes, hydrotherapeutic measures seemed to produce no decided effect upon the course of the disease, but patient's health was greatly improved.

**Sexual Hypochondriasis.**—A man forty-seven years old (referred by Dr. S. Weir Mitchell), complained of impotence and a sensation of water trickling down the anterior aspect of his thighs. His habits good. He had had three children, which had died, two during birth. Sexual desire remained, but the sexual act could not be successfully carried out. Seminal emissions occurred during sleep. Two strictures had been cut, but without relief. The peripheral circulation being feeble, the skin flabby and inelastic, the pulse compressible, and a general aspect of mental and physical depression being present. A hot-air bath (170 degrees) for twelve minutes having warmed him up, a rain bath of one hundred degrees reduced to eighty degrees during forty-five seconds was given under thirty pounds pressure, and followed by the jet douche at seventy degrees for two seconds under fifteen pounds pressure. General massage was given for fifteen minutes. The reaction was poor.

Subsequently the Scotch douche was added, the temperature being reduced daily one or two degrees, and the pressure being increased. The reaction improved and the patient looked brighter. The perineal douche (jet) of sixty degrees for one minute was then added for psychic effect.

The patient subsequently became dissatisfied and insisted upon more active measures.

The psychrophore of Winternitz (a small bag of rubber or skin secured to a double-current, straight rectal tube, attached to an irrigator), was then applied for five minutes with water flowing at forty-five degrees.

The patient became brighter, but maintained that his sexual power had not improved without trial.

Two other cases of sexual hypochondriasis of a milder form and in younger men, were successfully treated by the procedures here outlined.

**Sexual Neurasthenia.**—In a man age twenty-five, tonic treatment by hot-air baths, followed by rain baths and the jet douche to spine, gradually lowered to forty-five degrees, was positively efficient in establishing a satisfactory condition.

**Angina Pectoris.**—Mr. D., forty years old, of robust appearance, suffered for several months from agonizing pain in the precordial region on attempted exercise. He was incapacitated for business and was much depressed by the diagnosis of angina pectoris made by Drs. Keune and Janeway diagnosed angina pectoris. Mr. D. presented a decidedly gouty diathesis, the urine being laden with uric acid. Meat was excluded from the diet, and a wet pack was given for one hour daily, and a continuous wet compress was applied to the left side of the chest. Later, wet packs were applied daily, a sheet being wrung out of water at fifty degrees, followed by an affusion with water at seventy degrees. The man always slept soundly during the packs.

The pain entirely disappeared, although he did more work than ever in his life, and passed the excitement of seeing his factory burned down and reconstructing it bravely.

The soothing effect of the wet pack and its effect in promoting tissue-change, are well exemplified in this case.

**Incipient Pulmonary Tuberculosis.**—A merchant, twenty-six years old, pale and emaciated, related that he had been losing flesh and coughing for seven months; that he was constipated and had no appetite. He had caught cold

following exposure, but had no hereditary element. The temperature was 101 degrees, the pulse 120. The percussion note was dull in the left supraclavicular space; the respiratory murmur at left apex was harsh, and expiration was prolonged. He weighed 106½ pounds. A hot-air bath was given until warmth was established; this was followed by a rain bath at ninety-five degrees, reduced gradually to eighty degrees for forty seconds under ten pounds pressure, gradually increased; then a spray douche was applied at fifteen pounds pressure, gradually increased to thirty pounds for four seconds at seventy degrees. This was repeated daily. Ten days later he was looking better; his appetite had improved, and he had gained one and one-half pounds. The sputum contained tubercle-bacilli. Dr. Janeway diagnosed pulmonary phthisis, and advised removal.

Under treatment with the hot-air bath, followed by the rain bath at eighty to seventy degrees and a spray douche at seventy to forty degrees, the weight of the patient increased in five weeks to 114 pounds.

The appetite became excellent, though the cough remained troublesome and became an annoying feature. The temperature remained elevated. Benozin inhalation and codein one-quarter gr. every four hours, were followed by improvement in the cough. Tubercle-bacilli continued to be present in the sputum.

The patient ultimately became almost free from cough; appetite and digestion became excellent; weight increased to 123½ pounds; tubercle-bacilli could not be found in the sputum on January 21st.

There having been no change made in the patient's diet, mode of life and treatment, this case is a clear illustration of the utility of judicious hydrotherapy in improving nutrition in cases that usually thwart us. Clinical evidence of its value in pulmonary tuberculosis is accumulating so rapidly that reference need only be made to the cases I reported to the State Medical Society last February. One of these, thirty-three years old, of one and one-half years duration, beginning with pulmonary hemorrhage, gained twenty-six pounds in three months; and coughed so little that no specimen of sputum could be furnished; another, thirty-six years old, ill two and one-half years, beginning with hemorrhage, gained twenty-one pounds, with disappearance of tubercle-bacilli from the sputum, and returned to work; another, thirty-one years old, ill one year, with repeated hemorrhage, night-sweats, etc., after a year's treatment, gained twenty pounds in weight, with disappearance of the bacilli and slight physical signs and able to go to work. ("Transactions N. Y. State Med. Society 1892," p. 332.) Such stubborn facts should make us pause ere we condemn these sufferers to exile from home. A more methodical management, as already indicated, offers a reasonable prospect of success with home treatment.

Clinical proof abounds that pulmonary tuberculosis offers next to nervous disease the most fruitful field for hydrotherapy.

**Advanced Nephritis with Albuminuric Retinitis.**—Mr. A., sixty years old, a foreman in a lead-trap factory, presented pronounced swelling of feet and ankles, breathlessness on exertion, morning nausea, headache, double vision and vertigo; while the urine had a specific gravity of 1020, and contained a large proportion of albumin and an abundance of hyalin casts. But twenty-two ounces of urine were passed in the twenty-four hours. An initial dose of ten grains of calomel was given, together with potassium-bitartrate lemonade, and one minim of a one per cent. solution of glenoin every three hours until the face flushed. In addition hot blanket-packs were applied for one hour, morning and evening, the patient being wrapped in a blanket wrung out of hot water and covered by dry blankets. Examination by Dr. E. S. Peck disclosed the existence of homonymous diplopia, amblyopia and albumin-

uric retinitis. The hot blanket-packs were given once a day, by means of a blanket thoroughly wrung out of hot water laid upon another blanket. No albumin nor casts in his urine.

October 4, 1891. He worked without interruption during the entire winter, until August, 1892. He was at Hackensack attacked on the 16th of August by apoplexy and hemiplegia, from which he died.

Dr. St. John writes me that the urine contained no casts, and but a small percentage of albumin, and there was no edema.

Cases like this should give us confidence in the value of hydrotherapy in milder cases of Bright's disease. In the Montefiore Home such cases are not infrequent.

**Subacute Nephritis—Intense Catarrhal Jaundice.**—Mrs. S. consulted me on June 29, 1892, being pregnant eight months. Albumin and granular casts in urine indicated nephritis of pregnancy. Two days later she was attacked by convulsions, during which she was delivered of a child which has continued to thrive. She remained comatose twenty-four hours, the urine being reduced to six ounces. Calomel hot blanket packs and nitro-glycerin "unlocked" the kidneys. The urine remained albuminous and scant for several weeks. Dr. A. H. Smith sent her to me on the 26th of September, with the following history (abbreviated):

"It appears to me to be a case well adapted for hydrotherapy. The itching is very distressing. I found constant itching of the entire surface; her eyes and skin had a yellowish tinge, bowels constipated, stools clay colored, no appetite, urine thirty to thirty-six ounces daily." She was now ordered a daily wet pack for three-quarters of an hour, sheet wrung out of water at seventy degrees, reduced daily two degrees, followed by rapid ablation with water at 60 degrees, reduced daily one degree; also an enema of one and one-half quarts of water every day at eighty degrees, reduced daily five degrees until sixty degrees was reached; Carlsbad salts twice a week, and a non-meat diet. She passed twelve ounces of urine during the first four hours after the first pack. It continued to increase daily until the quantity reached far beyond the normal. This treatment was continued until November 1st. The last albuminous urine (a trace) is recorded for October 11th, at which time a few granular casts were still present.

December 27th.—Since that time eight specimens have been examined, all of which are entirely free from abnormal elements. For two weeks she had hot-air baths, followed by the rain bath at ninety-five degrees, reduced to eighty degrees for twenty seconds and the jet douche at seventy degrees for two seconds, with massage.

January 15th.—Patient has been discharged several weeks with allowance of meat every other day. She is perfectly well. Urine examined to-day is found normal.

**Epilepsy.**—July 19, 1892.—A. F., age fifteen, was brought to the Hydratric Institute by his father who says, on the thirty-first of March, 1892, on the day of his daughter's burial, the boy fainted. Later he fainted in school. Dr. S. P. Cahen investigated and concluded that it was "a form of epilepsy." The boy was kept from school and put on bromide potassium. The attacks becoming more frequent, Dr. Geo. W. Jacoby was called in consultation. He continued to have attacks every day and very often twice a day, lasting from five to ten minutes. At first he lay unconscious, without any movement whatever, then the attacks became violent, frequently requiring several men to hold him down and prevent him from doing himself bodily harm. Dr. Jacoby was again called in consultation and made an unfavorable prognosis. Neighboring physicians gave him hypodermics of morphine. Patient also has received electrical treatment from Dr. Cahen. *Status praesens.*—Face pale, covered with acne, eyes restless, hand tremulous, gait unsteady, appetite fair but capricious, gas-

tric oppression after meals, bowels constipated. Patient appeared to be brominized.

*Treatment.*—A wet pack-sheet wrung out of water at 70°, reduced daily two degrees, followed by a rain bath at 90°, twenty-five pounds pressure gradually reduced during thirty seconds to 75°. Resorcin in hot water an hour before meals.

August 20th.—This treatment had been used daily, the temperature of the bath being reduced two degrees every day. He had a slight attack five days after treatment was begun, none since. He was ordered to Long Branch to take surf baths. He has remained well up to January 30th, 1893.

If the few clinical histories here offered will induce practitioners to utilize water more frequently as one of their remedies, I shall be content. Domestic treatment will suffice in most cases, but if these fail a methodical treatment under an expert hydro-therapist may be of advantage to the patient.

The best consultants in Germany, Italy and France, men like Leyden, Charcot, Nothnagel and Erb send their patients to these institutions with their diagnosis and general suggestions, rather than with specific directions.

Finally, so much depends upon the reactive capacity of each individual that only systematic observations can determine the most useful procedure in each case.

#### DISCUSSION.

Dr. Mary Putnam Jacobi: One can hardly do better than to repeat what Dr. Baruch has said in almost the words employed by him, that in water, by means of the various forms of its application, we have a type of almost every other possible therapeutic measure, and only one remark should be added to mitigate the fanaticism of certain uneducated water enthusiasts; namely, that the water treatment does not go far enough to meet all the indications. I have followed with the greatest interest Dr. Baruch's various contributions to the subject of hydrotherapeutics, and have been exceedingly delighted to see that the subject has begun to be taken up seriously in New York city, where, I think, until Dr. Baruch began to study and investigate it, it had been much neglected. A superstition that the cold bath is too exciting to be tolerated, and that it is something which people can only gird themselves up to with great energy and strength of will, is very frequently encountered among the laity and many physicians. I think Dr. Baruch must have had great influence over the young lady whose case he has just related to induce her to continue the treatment after she had fainted under it on several occasions. My own observation has been that if patients feel at all tired after they have undergone one seance with the water treatment they consider that they have entirely gone to pieces, and will not discuss the matter further lest they be persuaded to continue it. It seems that where persons feel so badly after beginning the cold water treatment, it is because the vaso-motor system of nerves have been excited out of proportion to the excitation which should be conveyed to the spinal nerve centers. It is an elementary truth, to which Dr. Baruch has referred, that the characteristic result of the application of cold water to the skin is a very great stimulus to the nerve centers and dilatation of the cutaneous vessels, but in some instances, instead of there being excitation of the centers in the cerebro-spinal system of nerves, the excitation is expended upon the vaso-motor system, producing contraction of the blood vessels and diminished blood supply as a tertiary rather than as a secondary effect, so that the subject remains cold or chilly and the surface pale. There is also apparently contraction of the blood vessels of the brain, which may account for the intensely wretched feeling from which the person suffers. It is evidently entirely improper, as Dr. Baruch has pointed out, to begin the treatment in such cases by applying cold to the surface.

One must begin with heat. I suppose when the blood vessels on the surface are mechanically dilated by heat that there is such a degree of stimulus of the cerebro-spinal nerves they are not exhausted by the subsequent application of cold.

I would ask Dr. Baruch his opinion of an assertion by Dr. Weber, of London, that persons who have commencing uric acid deposits should not be subjected to the use of cold water, Dr. Weber advising only hot water. Would Dr. Baruch regard this simply as a fancy?

Dr. Frederick Peterson: Although I came in too late to hear the paper read, yet being acquainted with the views of the author, I am sure I should coincide with most of his statements. I am particularly in favor of hydrotherapy in nervous and mental diseases. I think there are many conditions of mental disorder in which hydrotherapy is of great value. In incipient melancholia we have no other agents, quite as efficient as prolonged warm baths. In motor excitation of acute mania there is, I think, no agent quite as useful as the hot wet pack. I have found by experience that it is much better than the straightjacket and injections of hyoseyama. Professor Winternitz, of Vienna, told me that fully two-thirds of his cases are of nervous diseases, that he found this agent successful in many diseases considered incurable. Hydrotherapy should be much more used. It is valuable in chorea, epilepsy, and many spinal disorders.

Dr. A. D. Rockwell: It would be a good thing if some one would enumerate all the drugs which have come into vogue, had their day, and then were abolished. It would show much useless drugging has been going on, and the superiority of rational methods. As to therapeutic methods other than medication we can but be struck by their harmony. Hot and cold water, exercise, etc., have been known since the beginning of medicine, and the more we know of them the better do we appreciate them. I quite agree with Dr. Peterson as to the great value of water in nervous conditions. I would like to refer to a special use of water, a mechanical use it is true, but yet one of great value, namely: intestinal irrigation.

Dr. Rauson: I can confirm what Dr. Baruch has already said by my experience at Richfield Springs, where I have occasion to use water in many cases during the summer. I can speak particularly of its value in nervous conditions. The few nervous cases which I have seen there have been mostly of neurasthenia in business men worn out by close attention to their affairs. In them I have used the cold douche with the most excellent effect. It relieves their insomnia, increases the nerve tone, and aids the digestion.

Dr. Baruch: My object in reading the paper was to give practical details and demonstrations, showing that water can be applied to the most delicate subjects. I have seen this demonstrated very often at the Montefiore Home, where a condition of admission is the incurability of the disease. These are most desperate cases. Here we find patients who never took a bath before, gradually become accustomed to taking it at a temperature of sixty-five degrees Fah. every day, and frequently improve.

I would impress the impropriety of using the term cold water or warm water. We do not tell patients "take quinine"; we give them the dose, etc.; thus special directions should be given as to the temperature at which a bath should be taken, the necessity for securing reaction, etc. Referring to Dr. Jacobi's question, I may say that no person is better able to judge than she of the influence of the wet pack upon tissue metamorphosis about which she wrote the best article in the English language as long as ten years ago. Dr. Weber's idea is a fancy.

In my propaganda for hydrotherapy, I have in some quarters been charged with unwarranted enthusiasm. If a conscientious proving of all remedial agents in vogue and proposed during an active general practice of thirty years entitles a man to an opinion on therapeutics, I would



reiterate with emphasis, the conclusions given in "Hare's System of Practical Therapeutics:"

1. We possess in this method a valuable auxiliary to methodical treatment of many, *though not all*, acute and chronic maladies.

2. In many chronic diseases it has proved so successful after failure of medicinal remedies, that *no case should be yielded up as hopeless until hydrotherapy in some form has been tried*.

My observations at the Montefiore Home, which receives only incurable cases, demonstrates this fact.

**The Therapeutic Value of Suppuration.**—Fochier has observed (*Union Med.*, No. 39, 1892, p. 465) that in some cases of puerperal infection, when there was no important appreciable lesion, a sudden amelioration not rarely takes place coincidently with the appearance of a focus of suppuration in the iliac fossa, in the breast, in the subcutaneous cellular tissue, or about a joint. The thought suggested itself that in suitable cases the establishment of suppuration by the subcutaneous injection of essence of turpentine might be a rational procedure; and in a number of cases successful results were by this means obtained. Governed by the same simple principle, Lepine and Dieulafoy each employed the injections in a desperate case of pneumonia, with a fortunate termination. About fifteen minims were injected in each situation selected. Suppuration took place in the course of a few days, but it was unattended with elevation of temperature, and the pus was aseptic.

## OBITUARY.

One after another the fathers of our school, the pioneers in a new and advanced therapeutics which infused that life and power into the medical profession through which it has won its most brilliant results, are passing from the field of their earthly toil to that hereafter where "the mortal shall put on immortality and where death is swallowed up in victory." Dr. ELIHU GEORGE COOK ended his earthly life in this city early in February at the age of 76 years. Dr. ALLEY died at his home in Moravia last month at the age of 91 years. Dr. ALONZO BALL, of this city, is still hale and hearty with a clear eye, an erect form and a vigorous intellect, at the age of 93 years, and Dr. LEWIS HALLOCK, who graduated in 1826, is still to be seen in his 90th year taking his daily rides and walks in the practice of his profession. As we stand by the new-made graves of the dead, or converse with the living, with what unction and truth can we repeat the words of Webster: "Venerable men, you have come down to us from a former generation. Heaven has bounteously lengthened out your lives that you may behold this joyous day." All these men participated in the early struggles of the new philosophy in this country, when courage was required to uphold convictions and stem the current of professional abuse, courage which was shown in that steady, persistent, intelligent work whose leavening power is seen in the more scientific teaching and practice of the whole medical world. Dr. Cook was born in Oneida County, New York, in 1817, and was one of the first graduates of the Medical Department of the University of the City of New York in the days when Frelinghuysen was chancellor and the immortal Mott and Draper were in the chairs of surgery and chemistry. In 1843 Dr. Cook married Miss Susan S. Putnam, of Chataqua, who as a physician is respected and honored in her own profession, and as an author has endeared herself to thousands of her own sex. Dr. Cook was a careful student, a close observer; possessed of warm sympathies, a quick perception and a logical mind, he endeared himself to a large circle both in and out of the profession, to whom he left the rich legacy of an earnest, honest, loving heart and an untarnished name.

## MISCELLANY.

—Dr. Charlton finds *hydrastis can.* in twenty drop doses, four times a day, a specific in the vomiting of pregnancy. He believes this drug reduces the blood pressure, diminishes the hyperemia of the uterus and calms the irritated vaso-motor centers of the digestive apparatus.

—In Paris recently, four unknown persons bet among themselves as to which could drink the largest quantity of water. One drank twelve litres, another nine, a third seven. All three died a few hours afterward; the fourth is seriously ill in a hospital.

—A book to which the late distinguished physiologist, Professor Brücke, of Vienna, devoted the last months of his life has been published by Brannmüller, of Vienna. The work is entitled "How a Man May Safe-Guard the Life and Health of His Children," and is, as the author states in his preface, intended for the lay public, not for medical men. It is, he adds, founded on experience, not on theoretical speculations.

—An occasional drink of cold water will augment feeble labor pains more promptly and permanently than most oxytocics.

—Exner said that Meynert had been accustomed for some time past to liken the brain to a large globular projection draped with a mantle of grey matter, which reflected the outer world as a brilliant mirror. This mantle was populated with images and sensitive beings.

—The Russians are keenly alive to the value of women in medical work, and the Russian Imperial Council has, by a large majority, decided to establish a medical school for women in St. Petersburg. The Imperial Council and the Municipal Government will contribute \$158,500 for the purpose. The Municipal authorities will also give the site for the buildings for the school and clinic.

—There are 139,000,000 women in India, of whom 21,000,000 are widows. Among the latter are 79,000 who are under nine years of age. Some thousands of women and girls succumb every year for want of attention, medical and surgical.

—At the request of the Consul-General of Japan, Mr. Okoshi, Mr. Ernest Hart has collected a series of engraved portraits of Dr. Edward Jenner and a photograph of his statue in the metropolis for a committee of Japanese doctors, who, impressed with the enormous benefits which vaccination has conferred upon their countrymen, are taken steps to erect a public statue to that medical benefactor of mankind.

—Physicians can obtain a permit from the police which will give them the right of way in the streets of this city when answering calls for service.

—It is a noteworthy fact (says the *Medical Review*) that not a single case of small-pox occurred during the year 1890 in the British army. If this be not evidence of the protection afforded by re-vaccination against a malady once so common, and still disastrously fatal in armies where this precaution is not vigorously enforced, then logic and reason are mere accomplishments.

—There has just been formed in Berlin a society composed largely of ladies having for its object the suppression of trailing dresses, the fringes of which stir up the dust which may contain infectious germs.

—During the progress of the Hyderabad experiment (says the *Hospital Gazette*), several female monkeys were fitted with an apparatus to resemble the feminine corset and chloroform administered. Two died promptly and the others were saved with difficulty.

—One hundred and twenty-three hospitals in London one of the largest has a nursing staff of 250.

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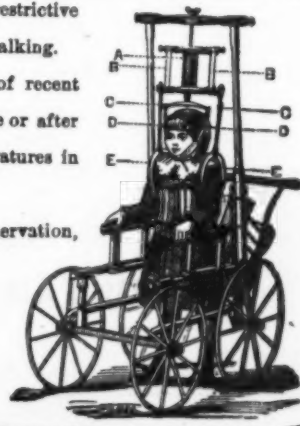
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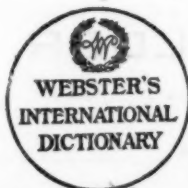
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Prostatic Troubles of Old Men--Pre-Senility,  
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A specific remedy for Dysmenorrhea, Amenorrhea, Leucorrhea, and all kindred diseases where the uterine organs are involved, acting as a powerful uterine tonic and invigorator; also as an anti-spasmodic, exerting a calmative influence, especially in dysmenorrhea, where the menstruation is irregular and painful, affording almost instantaneous relief without the least disturbance of the stomach.

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**Pavara Pills** produce a prompt, painless, and natural evacuation of the bowels, without the usual sequence of constipation; and they will not, under any conditions, interfere in the slightest degree with other medical treatment.

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Modern investigation has proven that the value of Cod Liver Oil as a medicinal agent is not due simply to the fact of its being an oil, but to the valuable active principles which it contains, as noted above.

Each fluid ounce of the Wine contains four grains of **PEPTONATE OF IRON**, the most readily assimilated and most valuable of all forms of Iron, it being partially predigested and free from styptic properties.

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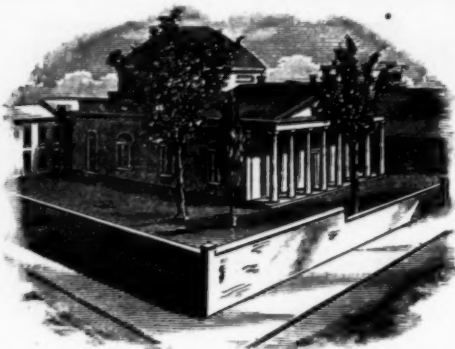
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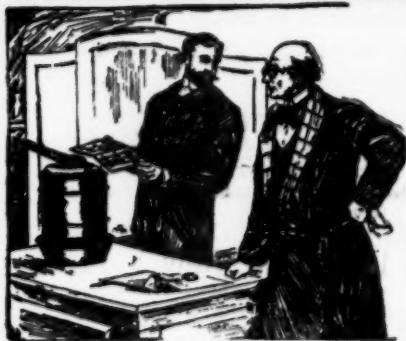
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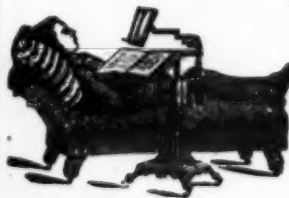
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Fig. IX—Chloroform Position.



Fig. XVII—Dorsal.

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